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THE Chemical Age

VOL. LXXII 5 FEBRUARY 1955 No. 1856

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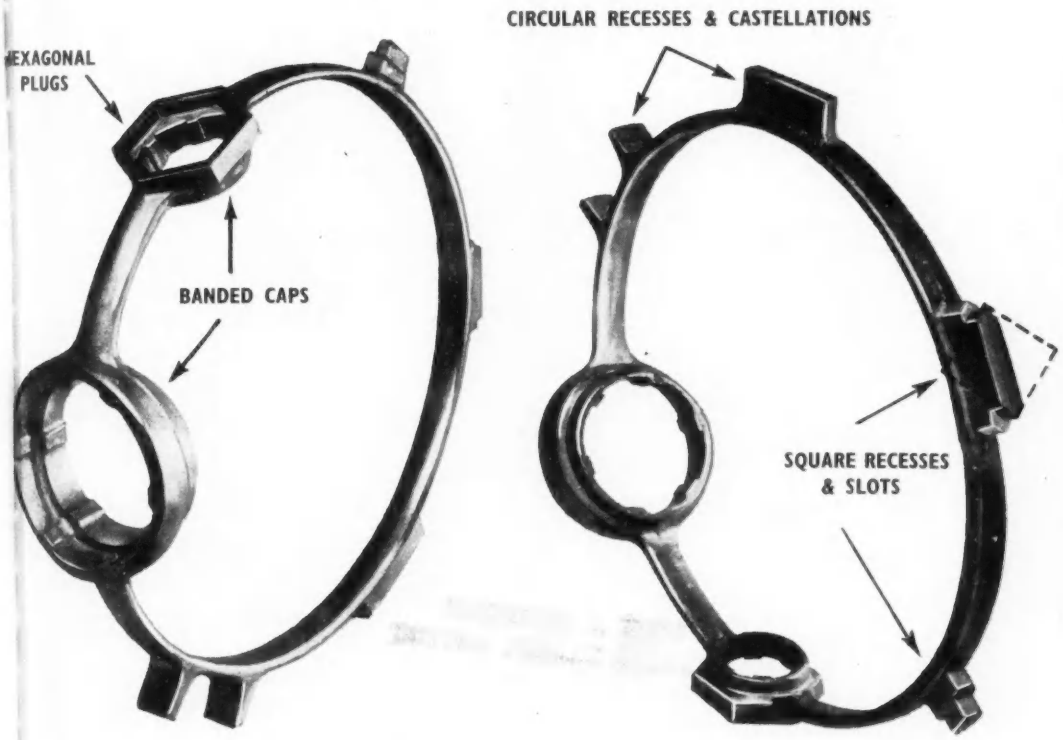

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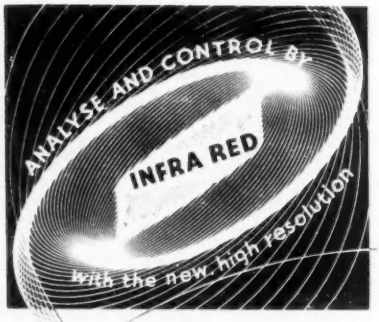

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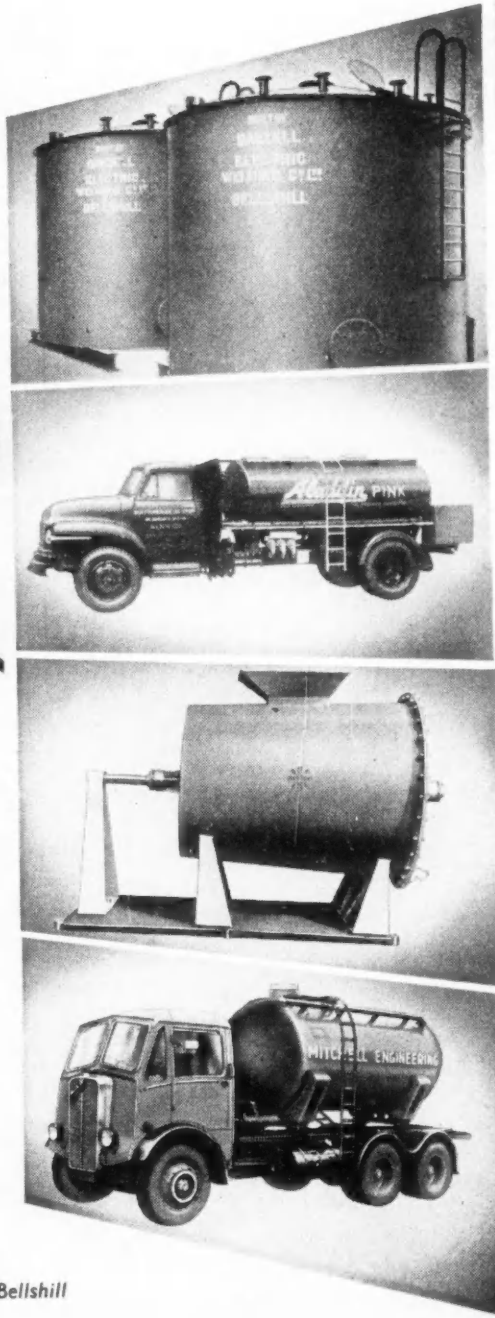

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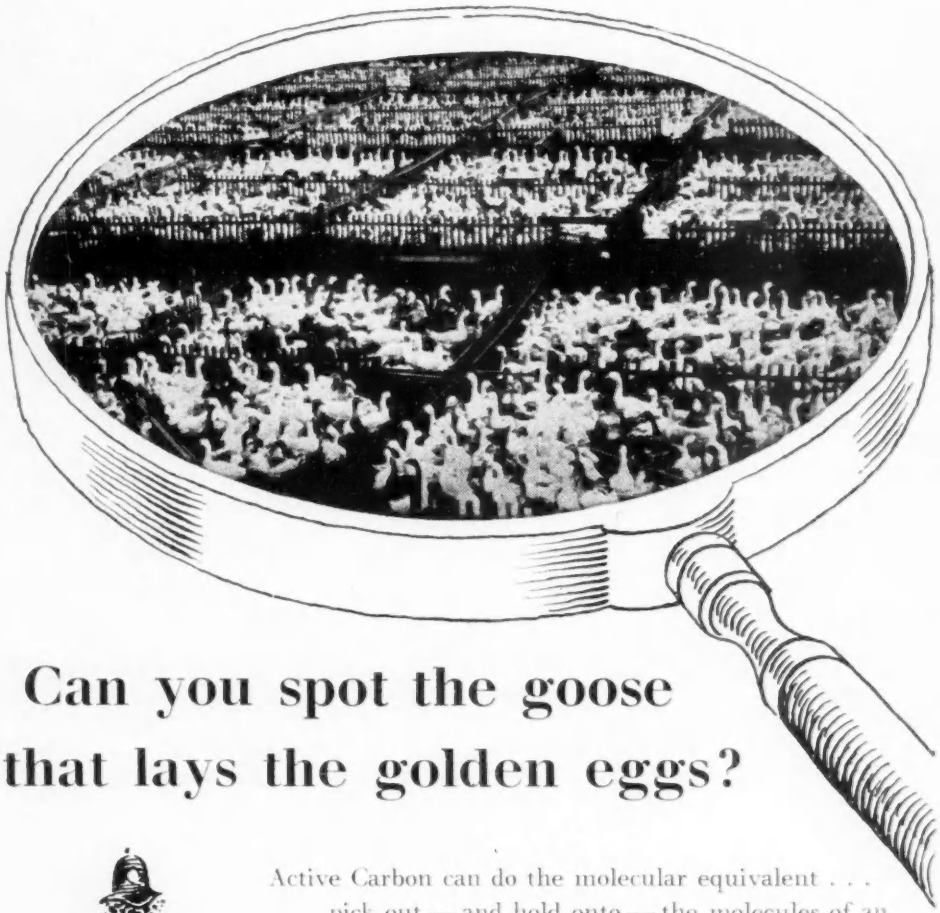

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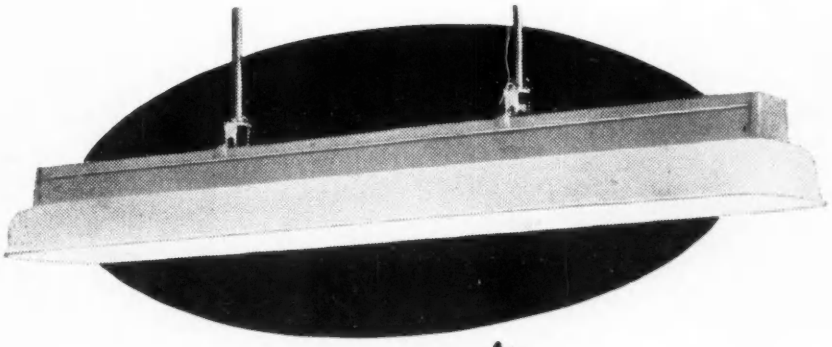

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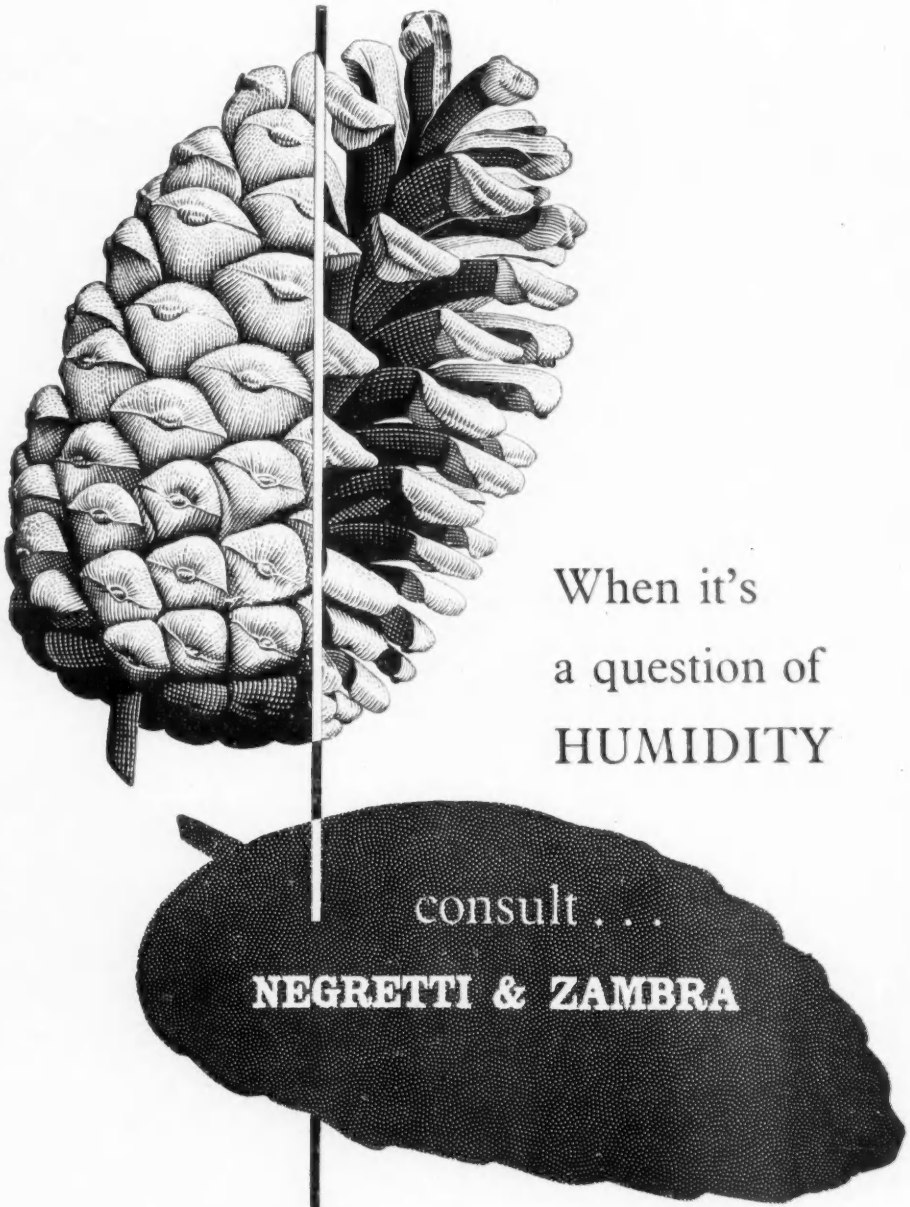

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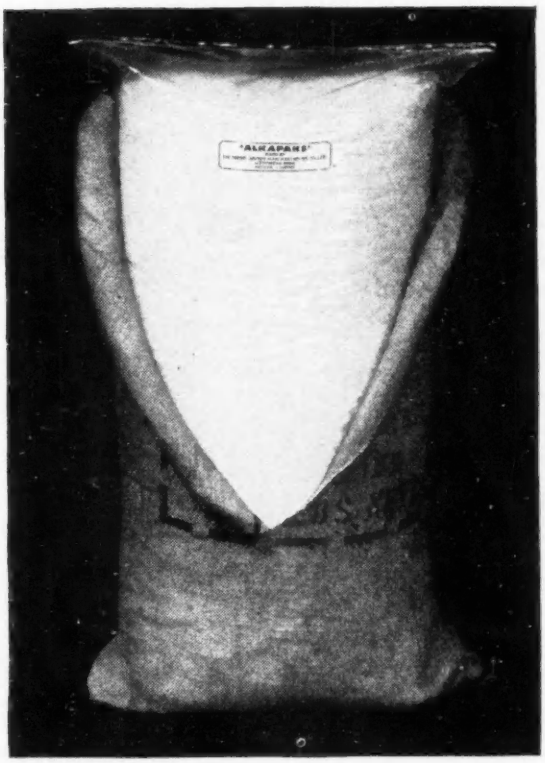

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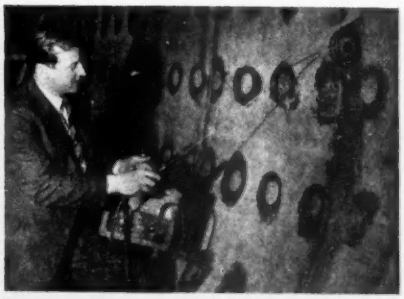
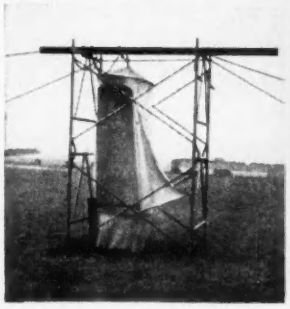
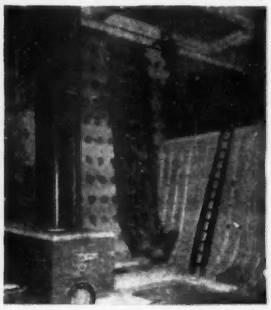
Rubber saves a Reservoir

WHEN MINING SUBSIDENCE caused severe cracking in the concrete floor and walls of the Mill Hill Reservoir at Easington, ordinary caulking and repairing could not make this extensive structure watertight. Quantities of stored water were lost and the district supply was frequently in danger of interruption. The Sunderland and South Shields Water Company's Engineers consulted Dunlop with the suggestion that rubber lining might solve their problem.

Dunlop surveyed the problem, then, co-operating with Water Company Engineers, Dunlop technicians experimented and found the solution. Now, 12,000,000 gallons of water are stored in the world's largest rubber "bag" housed inside the Reservoir. More than 100 tons of rubber and rubber compounds were needed—plus the fund of Dunlop technical skill—and a valuable asset of a public utility undertaking was saved.







Fixing rubber sheeting to wall surfaces by pegging with monel metal bolts set in the concrete with 'Rawlplug' bolt anchors. Ebonite nuts were fitted over the bolts and covered with rubber patches.

Butt-joints between sheets treated with rubber solution and covered with rubber strip to form a complete water-tight "skin." Electrically testing the seal.

Windsails fitted to "man-holes" in the reservoir roof forced moorland winds through the reservoir to dry out the floor and walls.

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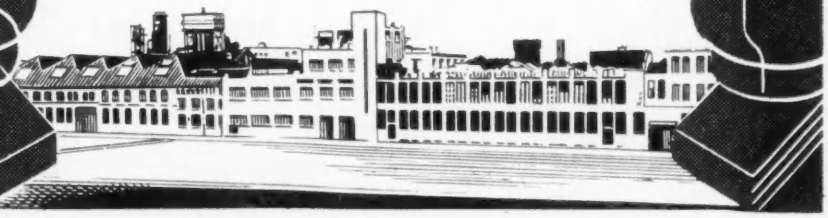

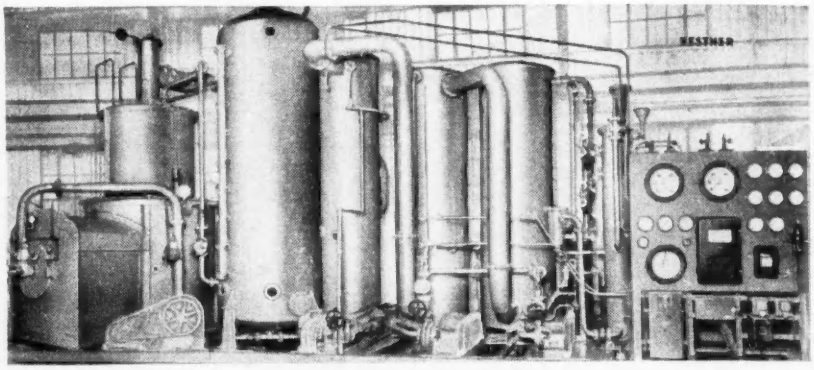

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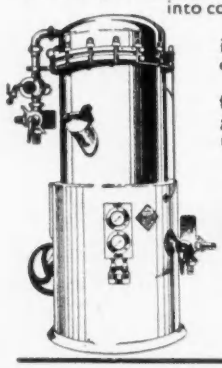

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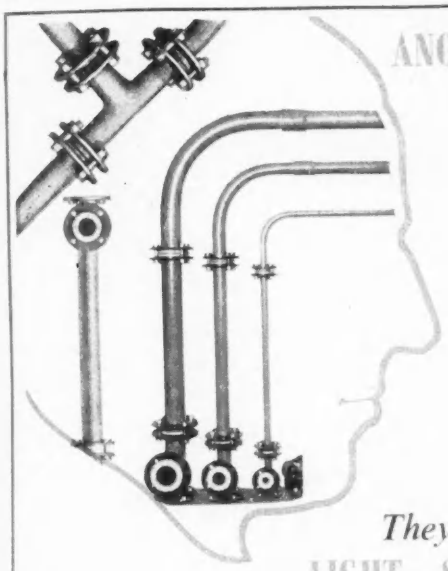

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Number 1856

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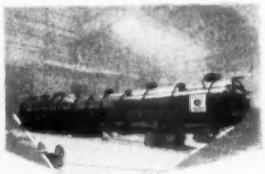

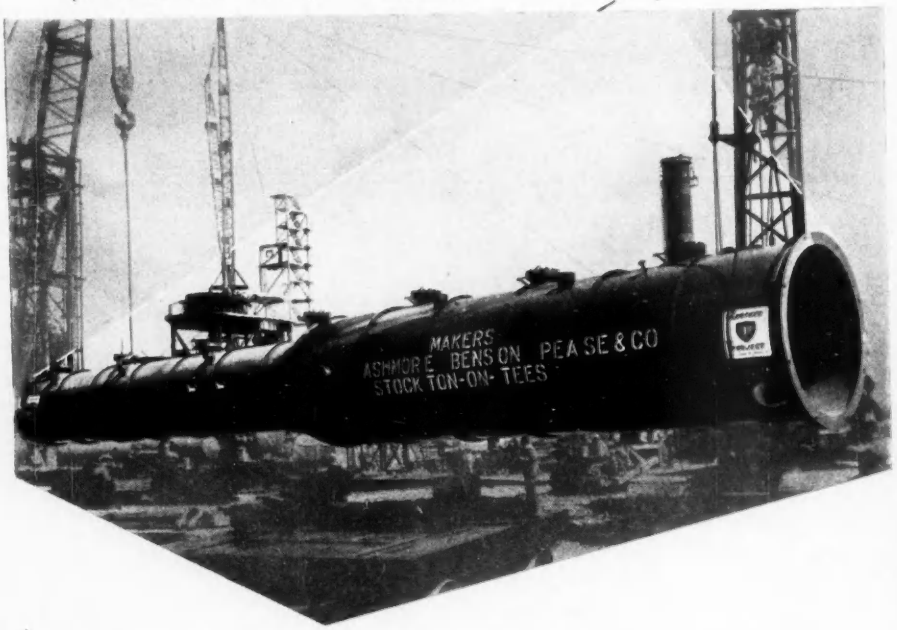

Photograph shows welded wet vacuum column for petroleum re-distillation unit. 5 feet to 7 feet dia. 59 feet long.

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Monopoly Marketing

A TWO-YEAR-OLD publication of the Federation of British Industries—'Coal: The Price Structure'—has re-appeared in a second and revised edition (12 pp., 2s. 0d.). It is a purely informative booklet, prepared in consultation with the National Coal Board, and as such is non-controversial. No one has intended this useful book to generate argument—when private and nationalised industry get together to provide mutually helpful information, should the Press rock the boat of co-operation by making critical use of the facts provided? Yet it cannot be ignored that this book supplies the answer to one of the major economic questions of mid-twentieth century Britain. To quote from an early paragraph: '. . . now that the whole of the industry is under the control of the National Coal Board, prices are no longer subject to the influence of a buyers' and sellers' market, since buyers are not able to obtain their supplies from an alternative source.' How can prices be determined when monopoly of supply rules the roost?

The chemical industry is listed by some politicians as ripe for nationalisation. One of the arguments behind their thesis is that the chemical industry is too monolithic, too monopolistic—and for this evil, real or imaginary, current or prospective, the cure is nationalisation. For the humble purchaser of chemicals, this must sound like prescribing a bite from the dog whose hair tickled him the day before! It is therefore particularly interesting to see how state monopoly in coal arrives at its coal prices.

The NCB's price structure scheme for industrially used coal applies to all grades that are thus distributed. Previously, under wartime control, price variations became particularly anomalous because flat increases in price per ton were applied to all grades when costs rose, which distorted price-value relationships. It is a fair point to concede, therefore, that the NCB scheme, initiated at the end of 1951, improves upon the price system of the wartime conscripted monopoly.

The danger in granting this point is that we are apt to forget that before the war coal prices were regulated by the free play of the market. 'This method was subject to constant check by the fact that supply and demand were free, in other words a buyer who considered that a coal was too dear could readily buy elsewhere. . . .' The NCB's price-settling scheme is an attempt to assess prices 'according to the quality of the coal without taking into account previous prices or traditions'. To use the word 'tradition' to cover the total discard of free competition is a stroke of verbal genius. It is said in this new edition of the FBI book that 'the scheme has been in operation for three years and it has not been necessary to introduce major modifications in its general basis'. If this is meant to imply that the scheme is therefore essentially sound, we must remember that the very absence of competition precludes those pressures that might make modifications necessary.

Calorific value is, properly enough, the base of the scheme. But the amount of ash in a coal affects its value and there is a points scheme to adjust prices based on heat-value according to associated ash. The points value of a coal

is its calorific value (BThU. per lb.) divided by 100, e.g. a coal of cal. val. 11,000 has a points value of 110. If such a coal has an ash content of 5 per cent, a table gives a deduction of 130 from the calorific value—its final points value would then be 108.7; if its ash content is 12 per cent, the deduction would be 360, giving the coal a points value of 106.4. This approach seems logical enough.

However, a points system must have a standard yardstick for conversion into price. The yardstick chosen by the NCB is 'a washed small coal with a top size less than 1 in. but not less than ½ in. with a points value of 112.5 industrial points'. This has been given an index price of 53s. 1d. 'It therefore follows that one point costs 5.66d.' All the points tables that mathematicians and statisticians could devise cannot alter the fact that this basic value of 5.66d. per coal point has been arrived at empirically and without competition as a factor of influence.

The price-fixing system has not ended at this simple stage. There are additions varying from 2s. 2d. to 9d. per ton for refinements of grading or washing, and there are deductions from 1s. 10d. to 4s. per ton for smallness of size and absence of screening or washing treatment. 'Up to this point,' it is claimed, 'the evaluation of the coal has been precise in that it is based on definite properties that can be measured and which can be allowed for in the price by means of a suitable formula.' But this surely refers merely to variations from the empirically chosen base of 53s. 1d. per ton for 112.5 points?

Then come the less easily measured characteristics of coals—hardness or friability, sulphur content, *consistency of quality* (our italics—for why should consistency be a variable in a points system based upon defined properties?), and 'special characteristics'. Untabulated and unspecified adjustments are made in respect of these and 'when a consumer attempts to check the price of his coal the possibility of there being such an adjustment should not be overlooked'. If we could have said 'so far, so good' a couple of paragraphs above, we must now change it to 'thus farther, much worse'. The consumer who checks his price may find either an error or an unknown adjustment. E. & O.E., monopoly version.

Next there is the vexed matter of different regional costs, for up to this stage of price evaluation only pit-head pricing has been involved. 'Throughout the history of the industry there has been competition between districts based on costs of production and transport advantages . . . if these differences are ignored the existing pattern of distribution would be largely changed. There would probably be great confusion and also grave economic effects in some districts.' So, to maintain present relations between producing districts and their markets, there must be 'some difference in the pit-head prices of similar coals produced in different areas'. This gives a further table of additions—from 16s. 1d. per ton for Kentish coal to nil for N-E and for six of the seven East Midlands areas. The average addition (not weighted for tonnages) is 5s. 7d., so that the biggest plus-variation from average is 5s. 6d. per ton.

Finally, the NCB, since this scheme started, has found it necessary to take relative scarcity of certain types of coal into account and make selective additions of 1s. to 2s. per ton to their prices. Coals sold for carbonisation have their own system of price evaluation, built up on similar lines; anthracite, unsuitable for inclusion in the industrial coal price scheme, has its own price evaluation formula.

That is how the NCB fixes the prices of its various coals. If the tone of this commentary has seemed critical, no criticism of the scheme or of the settled event, coal nationalisation, has been intended. It is difficult to see how the NCB officials could in fact have done otherwise. The nation having willed the end, the *modus operandi* must be created. Our critical tone has had but one objective—to ask plainly and clearly how a chemical industry in this country could survive (let alone expand) if some National Chemical Board had to fix the prices of thousands of chemicals and their grades by similar market-blind methods?

Notes & Comments

Chemicals in the Archives

CHEMICALS are being widely used in preserving ancient government records and documents at Washington. The method that has been evolved was recently described in *Chemical News*, the information bulletin of the Manufacturing Chemists' Association. Whether it is known to other custodians of historic and ageing papers we cannot say—certainly we had not come across reports of it before. Fumigation is one part of the preservation process; for this a mixture of 10 per cent ethylene oxide and 90 per cent carbon dioxide is used. The papers and their containers are thoroughly fumigated in steel vacuum tanks, and it is claimed that insects and moulds are both destroyed. The second part of the process gives a thin plastic cover to the paper. For this cellulose acetate in sheet or foil form is used. Each document is laid on a sheet of foil spread on a steel plate. After any loose fragments are 'tacked' with acetone, another sheet of foil is placed over the document and a second steel plate. Several of these 'sandwich' arrangements are built up, and the multi-layer pile is then placed in a steam-heated hydraulic press. The cellulose acetate foil softens under heat and is forced into the paper fibres by the pressure. The final protective cover given, therefore is one of intimate association, not merely adjacent shielding of the paper surface. Despite this addition of material, the treated document, as a result of the compacting pressure, is often thinner than in its original state. It is said that in 1954 the official National Archives agency at Washington used 7,500 lb. of cellulose acetate and 10,000 lb. of the fumigant gas.

Research & Development

THE 1954 annual luncheon of the British Coal Utilisation Research Station took place a good many weeks ago, but its proceedings have only recently appeared in print, in the *BCURA Quarterly Gazette* (No. 24). In quite a brief reply to the toast of the guests, Dr. Alexander Fleck (I.C.I.) threw out some weighty thoughts on the subject of research and development. The stage that follows research might well be given a better name than 'development', but Dr. Fleck could not improve upon a word that has now been 'sanctified by custom'. It was in his view the weakness of many research organisations that a project would be carried through the research stage and perhaps even into the development stage, and then lose its impetus. As a corrective for this tendency, Dr. Fleck believed in 'allying the development function with the commercial branch of an organisation rather than the technical side'. This brought about a most fruitful collaboration of technical and commercial men, which in his experience could 'have far-reaching effects for the good'. In this connection Dr. Fleck revealed that the development stage of Terylene had already cost three times as much as the research stage. Nor was this kind of proportion at all unusual. It was necessary for industry to be prepared to give this kind of support to industrial research associations if the work done was to produce its fullest benefits. Research associations must work even more closely with industry than they already do—'if this liaison is not sufficiently close, the original research may be entirely sterile'.

Sound Policy

FEW men are better placed than Dr. Fleck to lay stress upon the development stage of new products or new processes. It has been the chronic ailment of British industry to be slow and parsimonious in harnessing new ideas from the laboratories, and a great deal of I.C.I.'s success and growth is due to an immunity from this over-common infection. Is one of the troubles that we do not let commercial men into the research picture at sufficiently early stages? Or (at any rate in the past) have commercial men been too non-technical

to visualise technical potentialities? Dr. Fleck's faith in allying development with commercial rather than technical departments may be easier to cherish in his own company than in many others, for it has long been a sound I.C.I. policy to have a liberal proportion of technically-trained men in commercial sections.

More About Dyes

A FEW weeks ago (see THE CHEMICAL AGE, 1954, **71**, 1291) we drew attention to the generally improved post-war position of the British dyestuffs industry. More up-to-date figures for 1954 have now become available. If our export sales for the whole of 1954 maintained the rate achieved for the first nine months, the total value will now prove to have been £10,800,000 compared with £7,800,000 in 1953. The peak position of 1951—the year before the recent depression in textiles—seems to have been regained, although total world trade in dyestuffs is still running at about 9 per cent less than the 1951 level. Synthetic organic dyes dominate the picture: in 1954 they accounted in value for nearly 94 per cent of export sales—in 1952 their proportion was 86 per cent. At the same time about 95 per cent of our home requirement for dyes is being met by British manufacturers. Set against the not-so-distant historical past, this in itself is a great achievement and one of considerable value to the country's economy. One background influence in the present position is the rising standard of living in formerly under-developed countries. There is a demand for more clothing, which in turn creates the demand for more dyes. Today, India is Britain's largest customer. During 1954 price competition became keener, but quality—especially fastness to washing and light—is still a particularly decisive factor. Japan's dyestuffs industry is recovering the pre-war level of output, but her prices are reported to be too high and quality is below that of European producers. Germany has recovered only some 60 per cent of her pre-war output; however, she can to some extent offset this disability in the export market by reducing supplies for her home market. 1955 prospects for the British industry are excellent. The main competitors for export trade will continue to be Switzerland, America, and France, but there is no reason to expect British dyes to be any less competitive in 1955, either for price or quality, than in 1954. Provided world textile trade maintains its activity, the dyestuffs market will expand rather than recede.

Rise in Drug Exports

BRITISH exports of medicinal and pharmaceutical products in 1954 reached £33,559,000, an increase of £3,699,000—more than 12 per cent—over the 1953 figure. Export sales in 1954 were therefore not far short of the £37,000,000 estimated to be the current annual cost of drugs to all branches of the National Health Service.

Among the individual items for which large increases in exports were recorded were insulin, anti-malarials, barbiturates, vitamins, sulphonamides and aspirin. Total exports of penicillin and its preparations were higher in volume, but the fall in world prices was reflected by a decrease in value from £4,454,000 to £3,360,000. This decline in value was made up, however, by other antibiotics, which rose from £3,253,000 to £4,119,000.

Australia displaced India as Britain's most important customer for drugs, taking £3,289,000 worth in 1954 as compared with India's £2,591,000. Exports of over £1,000,000 were made to New Zealand, South Africa, Nigeria, Pakistan, Eire and Egypt. To the main dollar countries, the USA and Canada, exports were £303,000 and £709,000 respectively.

New Refinery Plant

A CATALYTIC polymerisation unit was recently commissioned at Antwerp Refinery, jointly owned by the BP Company and Petrofina. This will enable the refinery to produce premium grade petrol. Two more units are to be commissioned at Antwerp —a catalytic cracking plant, and a second distillation unit, which will raise the refinery's total capacity from 1,800,000 tons a year to 2,700,000 tons.

At Lavera Refinery, owned by British Petroleum's French associate, Société Française des Pétroles BP, a 250,000 tons a year platformer has been completed. This will be the first platformer in France.

Britain's First Complete PVA Plant

British Oxygen Helps Save Currency

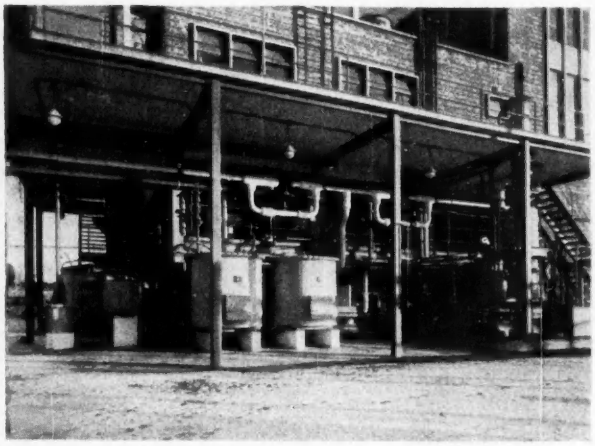
AS announced briefly in last week's issue of THE CHEMICAL AGE (p. 314), the first plant in Great Britain capable of producing polyvinyl acetate from the raw materials is now in full production at Chester-le-Street, Durham. The plant, owned by the Chemicals Division of The British Oxygen Company, is now marketing pure stabilised vinyl acetate monomer, polyvinyl acetate emulsion in four grades, and polyvinyl acetate granules. Although the plant is comparatively small it will permit a substantial saving in foreign currency and it is capable of further expansion should the need arise. Several British firms have been manufacturing PVA for some little time, but they have all been processing vinyl acetate monomer imported from Germany, Canada or other foreign countries. Monomeric vinyl acetate has never before been manufactured in the United Kingdom.

The process being used by British Oxygen is the catalytic vapour phase reaction of acetylene with acetic acid. The acetylene from another BOC plant on the site is purified and mixed with an excess of vaporised acetic acid and the mixture reacted continuously in the presence of a catalyst at a temperature of about 200° C. The gases leaving the converter are freed from dust and cooled in stages to condense the less volatile fraction. The liquid condensate is then fractionated in a distillation chain yielding refined vinyl acetate and recycle acetic acid.

The monomer is a volatile liquid and is unstable. To prevent it polymerising (an exothermic reaction which might cause an explosion) it is mixed with a hydroquinone or copper salt stabiliser and stored. Certain quantities of this stabilised monomer are being offered for sale for the production of PVA and PVA copolymers by other companies.

As both acetylene and vinyl acetate are highly inflammable the monomer plant has been built in the open and the number of people working has been kept to a minimum so that the entire unit is fully automatic. All separation, distillation, cooling and pumping is done mechanically and is supervised

A general view of British Oxygen's PVA plant at Chester-le-Street, Durham. For reasons of safety much of the plant is open. On the same site BOC also have industrial gases, medical gases, dissolved acetylene and melamine plants



A view of the vinyl acetate monomer plant. The acetylene is piped from BOC's dissolved acetylene plant which is situated on the same site some few hundred yards distant, while acetic acid is brought in big tankers

by remote control from a central electronic control room. This is slightly pressurised to prevent the collection of inflammable gases which might be fired by the sparking of electric terminals.

Unlike the monomer plant, the polymer plant is enclosed and air conditioned. This prevents contamination and allows for the maintenance of a controlled temperature in the room containing the extruders and the polymer mixing and storage rooms.

To make PVA granules the pure monomer is mixed with regulator and catalyst into polymerisation vessels equipped with stirrers. The viscous polymer is extruded and passed along a cooling conveyor. After it has solidified it is cut into granules, cycloned and finally packed in drums.

For the emulsion the pure monomer is dissolved with catalysts, emulsifying and thickening agents according to the end-use of the particular grade of emulsion. The mixture is stirred to facilitate the reaction, collected in tanks and kept at a controlled temperature ready to be barrelled for sale as a water emulsion containing 55 per cent total solid. It is marketed in 40 gal. drums.

The plant was designed by BOC engineers and is said to contain the best features of several foreign PVA plants. Unique to Chester-le-Street, however, is the electrical wiring system. This is totally enclosed in sealed tubes which are pressurised to prevent the entry of explosive vapours into the circuit and their ignition by shorting.

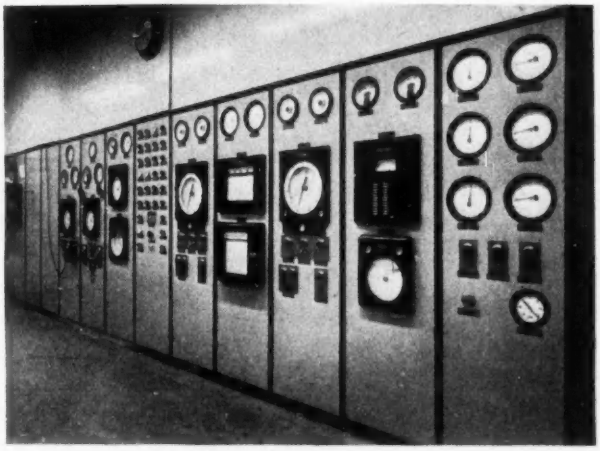
To avoid cooling down and starting up the plant—a slow, expensive process—the plant runs continuously, seven days a week, 24 hours a day except for the periods when the catalysts must be renewed or cleaning and maintenance undertaken.

Welcoming a party of journalists to the plant on 26 January, Dr. R. F. Goldstein, general manager of British Oxygen's Chemical Division, said:

'BOC's interest in chemicals took form after the last war. As makers of carbide, cyanamide and acetylene, it was natural for us to ask ourselves what we could do with these materials. We have used them as the starting point for our entry into the chemical field.

'Our first venture, melamine, the plant you passed on the way to the polyvinyl acetate plant, was embarked upon because we make cyanamide, which itself comes from carbide; the second, the polyvinyl acetate plant, has been established to take advantage of the fact that we are one of the largest producers of acetylene in this country. I should mention a third product of BOC Chemicals Division, vinyl pyrrolidone, which we make on a small commercial scale elsewhere. We make this for a different reason—possession of special know-how and technique. It is based on high pressure acetylene technique, of which we are the only exponents in this country.

'I want to make it very clear that BOC are in the chemicals business and not in the plastics business. Chemicals are neither raw materials of nature, nor finished products of industry. They are manufactures used as raw materials by other industries in making the final end-product which reaches



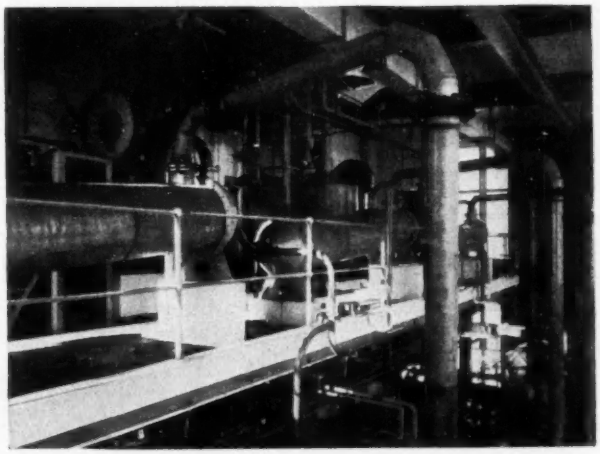
One side of the control room which is pressurised to exclude explosive fumes. The electric wiring system is enclosed in pressurised cables for safety reasons

the ultimate consumer. Thus melamine, which British Oxygen make, is a chemical; it is sold to the plastics industry which makes a melamine resin from it. . . . Equally, polyvinyl acetate is an end-product of the chemical industry. At the same time, it is a raw material for the plastics industry. Its only outlet is to plastics.

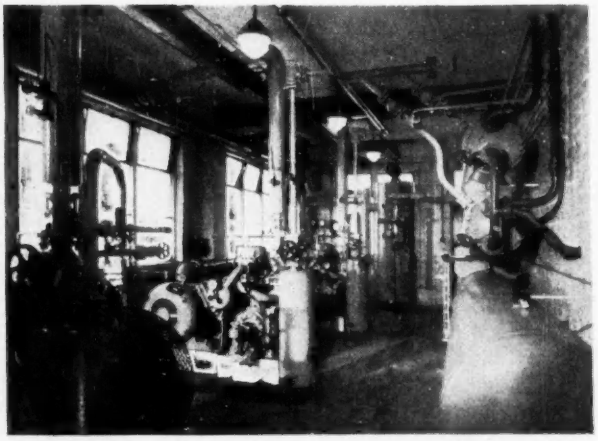
'One can divide the outlets for plastics into two fields; tangible plastics, which one can feel and handle, such as bakelite switches, polythene bags, nylon toothbrushes; and non-tangible or non-identical plastics, in which the plastic loses its identity in the finished article—as with adhesives, paints, textile treatments. Polyvinyl acetate is a non-identical plastic. The main outlets of PVA are in emulsion water paints and in the adhesive, paper and textile industries.

'Until now all the polyvinyl acetate manufactured in this country has been based upon vinyl acetate monomer imported from abroad, mainly from Germany. BOC are the only indigenous manufacturers of the monomer and therefore we can take care of quality and specification right through from the chemical raw material to the polymer for the plastics industry. We are also the only indigenous manufacturers of polyvinyl acetate granules.

'PVA is important. But I do not want in any way to give you a distorted picture of its place in the plastics industry. . . . The total tonnage of plastics raw materials made in the UK in 1954 is probably about 250,000 tons, roughly double the 1948 figures. Polyvinyl acetate would represent only a small fraction of this total, and at present we



Part of the polymerisation room. For the comfort of operatives and for cleanliness this section is enclosed



The refrigeration room

manufacture only a percentage of the total of the vinyl acetate monomer consumed in this country, most of which goes to polyvinyl acetate emulsion.

'On the other hand, plastics raw materials and the intermediates from which they are made are the sectors of the chemical industry which are growing the fastest in the UK, in Western Europe and in the US. That trend will undoubtedly continue, and the use of PVA will expand it. Fortunately we still have room on this site to put up another plant or two, if we need them.

'This plant is an example of the most modern and up-to-date design to be seen anywhere. Much of the plant is outside; the operator works it by remote control in comfort from warmed and air-conditioned rooms. The polymer plant is enclosed and air-conditioned for an equally important reason: freedom from contamination. How technically advanced the plant is, is shown by the fact that the capital investment is about £10,000-£15,000 per operative.'

At the present moment imported vinyl acetate monomer is said to be selling at £160 per ton cif. UK. There is a 10 per cent import duty. BOC's prices are said to be 'comparable' with the German prices.

Higher Fees for Patents

HIGHER renewal fees are now being charged for patents and designs registrations due to expire after 30 April 1955; and after that date there will be a general increase in fees payable in respect of a number of patents and designs matters. These fees have remained substantially unchanged for many years despite considerable increases in administrative costs. This change, which took effect on 1 February, is announced by the Board of Trade who have laid before Parliament revised Rules which amend those made under the Patents Act, 1949, and the Registered Designs Act, 1949. In addition to providing for higher fees, the Patents Rules have also been amended in minor respects to make them conform to the requirements of the European Convention of 11 December 1953, relating to the formalities required for patent applications.

Flexibox Service

FLEXIBOX Ltd. announce that they have appointed a full-time service engineer to provide 'on the spot' service in southern England. He is Mr. F. C. Mace, based at the new London office, opened on 3 January, at 17 Stratton Street, Piccadilly (Tel.: GROsvenor 3422). He can also be contacted at his home, 39 Gore Road, Burnham, Bucks (Tel.: Burnham 1116).

Mr. G. W. Kinder has been appointed manager of the London office. The position of technical representative held by Mr. K. W. Macnee will remain unchanged, but he will operate from the new office.

The sales force in northern England has been strengthened by the appointment of Mr. E. Atkinson as resident representative in Newcastle-on-Tyne. His address is 22 Lemington Gardens, Fenham, Newcastle-on-Tyne 5 (Tel.: Newcastle 36756).

Advances in Metal Detection

Increased Sensitivity & New Ejectors

THE science of detecting by electronic means unwanted and possibly dangerous scraps of metal in non-metallic goods has only been developed on a large scale in this country in recent years. It is now being increasingly applied by firms in (among others) the chemical, pharmaceutical, plastics, textiles and foodstuffs industries.

The practice of metal detection is, briefly, for the products to be inspected to pass, usually on a chute or conveyor belt, through a search head aperture which is connected to an electronic control unit. When a metal particle goes through the aperture the control unit reacts and operates a relay which gives a warning by means of a red light or buzzer. The production line can be stopped and the position of the metal marked, or, alternatively, the offending product can be ejected from the company of its uncontaminated fellows without the flow being halted.

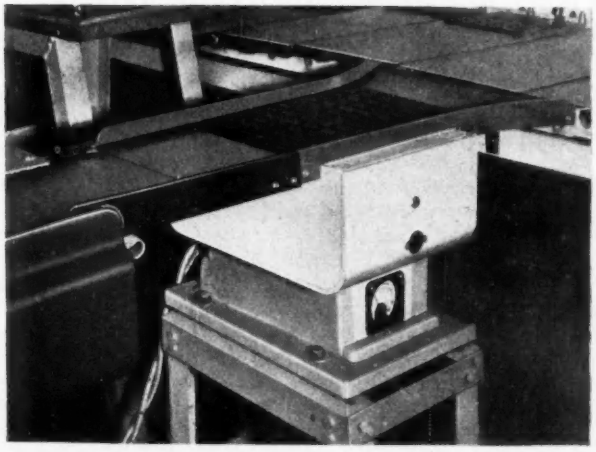
Each product presents a different problem, and the search heads are individually designed to suit their particular application. Different types of equipment may also be required according to the type of goods to be inspected. For example, for heavy duty use, as in mines and quarries, there is type HD.9 produced by Metal Detection Ltd. of Birmingham (see THE CHEMICAL AGE, 1955, **72**, 231). On the other hand, Goring Kerr Ltd. of Slough, Bucks, claim that their SS model is the most sensitive yet produced and capable of detecting down to 1 mg. of ferrous or non-ferrous metal.

The SS model is designed for products less than 1 in. in thickness and is particularly suitable for application to pharmaceutical products, such as pills and lozenges, and to products in sheet form, such as plastics or rubber. It has the advantage that the search head can be placed under a conveyor chute, instead of above it as in other types of equipment, leaving the top quite clear.

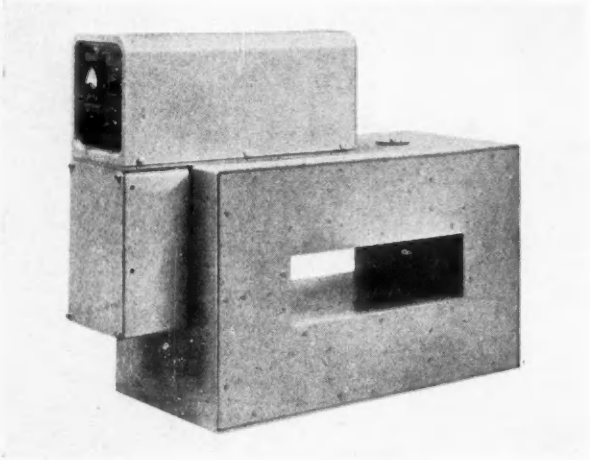
A modified version of this model in portable form can be used for examining the surface of materials like timber, hardboard and building materials. It can also be used for examining these products in cases where it is desired to locate comparatively large contaminations at a depth of more than 1 in.

The same firm also manufacture the SJS model, designed as the result of requests from several manufacturers for a small, highly sensitive equipment which could be easily transported from one site to another. The search head has a circular aperture of 1½ in. or 2 in. in diameter, and it is particularly suitable for extruded products such as confectionery 'rope.'

The aperture dimensions of the Goring Kerr standard model are governed by the width of the conveyor band or chute round which it is installed and the height of the product to be examined. There are four fixed positions of sensitivity: maximum, ¼.



The Goring Kerr SS Model in use at the factory of James Pascall Ltd., Mitcham



The 'Cintel' Type 4 metal detector

¼ and ⅛. It is sometimes found that the equipment is operating too often because of minute particles of metal which could be safely allowed to pass: This could apply, for example, when the conveyor band itself picked up small pieces of metal. The equipment can then be reduced in sensitivity by adjusting the control.

'Setting-up' of the equipment is simple; it is only necessary to obtain a given reading on the search head meter. There are only two controls, both provided with covers. One of these is set at the time of installation and needs no further attention for several months. The other control needs 'peaking' about once a month. By an ingenious circuit arrangement the equipment can drift off its original setting for a considerable period without any noticeable loss of sensitivity. The model can be supplied on motorised conveyor systems designed and constructed to individual specifications.

Cinema Television Ltd., of Worsley Bridge Road, London S.E.26, are now producing a new 'Cintel' Type 4 metal detector. A number of technical improvements have been made and the physical design has been changed to allow easier installation and service, but the new model differs from the old one in minor details only.

A maximum of six conveyor lines can be covered with one 'Cintel' detector with individual control of each line. A feature of the equipment is the automatic delay unit which does away with the need for the human element when it comes to ejecting a contaminated product. This unit is basically a mechanical 'memory' system which stores the pulse generated by the alarm relay when metal is detected and releases it some time later when the article containing the metal has travelled along the belt to an ejector.

An example suitable for a series of separate articles is a moving flap on the conveyor line which diverts the flow of any goods found to contain metal. The contaminated articles are detected by the search head and a pulse is sent to the automatic delay unit. When the article has travelled the distance from the head to the ejector, the delay unit releases the stored pulse which causes a solenoid to operate the flap.

There are also ejectors which strike the article and push it off the belt, or the contaminated spot can be marked with a dye, squirted on by a hypodermic needle, or a counter dropped on it.

'Cintel' equipment is designed so that in the event of any failure it will 'fail to safety' and the alarms will operate.

Ammonia Output Record

Production of ammonia in the Sindri Fertiliser Factory, India, in December 1954 touched the record figure of 8,164 tons—highest figure for any month since the factory went into production over three years ago. Average daily production of ammonia was 263 tons. Production of ammonium sulphate during the month amounted to 29,350 tons. This was the second highest figure for any month.

Indian Newsletter

FROM OUR OWN CORRESPONDENT

ARRANGEMENTS have been finalised for the establishment in the Bombay area of a plant for the production of sulphur dioxide, sodium hydrosulphite, hydrogen peroxide and other chemicals for photographic work and the textile industry. The plant is expected to have a capacity of about 8 tons of liquid sulphur dioxide, 2 tons of hydrogen peroxide, 5 tons of hydrosulphite and 3 tons of other chemicals. The total investment is placed around Rs.50,000,000 (£375,000) and the project has been sponsored by two industrialists of Bombay in collaboration with the Montecatini Co. of Milan, Italy.

* * *

Chemical industries can seldom thrive behind tariff walls. The need to bring down the prices of soda ash and to improve its quality was stressed by the chairman of the Indian Tariff Commission, opening a public inquiry into the continuance of protection and assistance to the soda ash industry in India. The market has shown considerable fluctuations in the recent past, while the two factories in India producing soda ash—Tata Chemicals, Mithapur, and Dhrangadhra Chemical Works, Dhrangadhra—have nearly doubled their rated capacities in the last few years. While the production of soda ash in India stood for the first nine months of 1954 at 35,200 tons, that of 1953 was 56,833 tons. In the first four months 1954-55, 34,595 tons were imported. The Tariff Commission had estimated a demand of 115,000 tons of soda ash per annum whereas the Planning Commission had expected the demand to increase to 155,000 tons by 1955-56, on the basis of developments envisaged in the consuming industries. The Tariff Commission have also been inquiring into the need for protection to the antimony and abrasives industry in the country.

* * *

Apropos the Government of India's rejection of the offer to set up a private steel plant in India by the Birlas in co-operation with some British interests, it has now been stated by the Government that no firm plans were submitted by British associates. This gives the impression that the door is still open for negotiations. The Russian steel experts have come and gone, though the contents of their report have not yet been revealed. However, according to the Minister of Commerce and Industry, it is unlikely that Salem (Madras) will be the site for the location of a proposed steel factory to be brought into being with Russian assistance. It was felt that owing to lack of suitable coal near Salem, the lignite deposits of Neiveli might be utilised. Whatever the location of the steel plant, the lignite project has been taken up. The British firm of consulting engineers made available under the Colombo Plan surveyed the potentialities and recommended six alternative schemes, ranging in outlay from Rs.350,000,000 to Rs.850,000,000 (£26,250,000 to £63,750,000). A scheme costing Rs.580,000,000 (£43,500,000) has been chosen and will be run under the joint authority of the Government of India and the Government of Madras State. The scheme has provision for mining 3,250,000 tons of lignite, generating 200,000 kW. of electricity and for factories to produce annually 200,000 tons of ammonium sulphate and 350,000 tons of carbonised briquettes together with possible production of coal tar and other products.

* * *

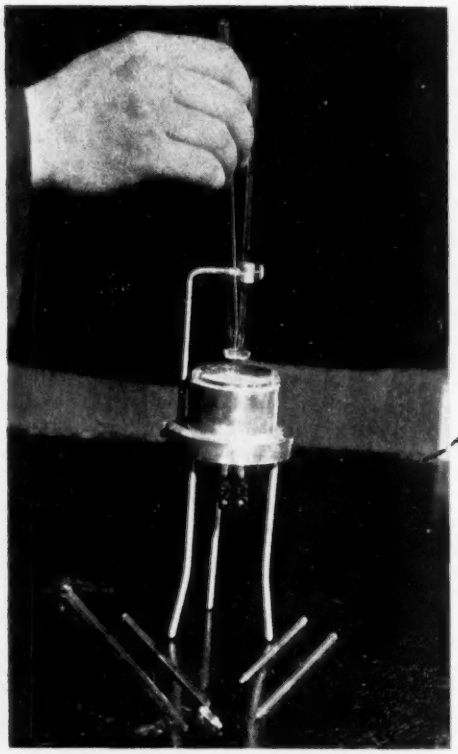
Pyrites deposits with at least 40 per cent sulphur have been discovered in two areas of Shahabad district of Bihar State by the mining section of the Geological Survey of India. The two deposits have 40 and 46 per cent sulphur and are believed to be extensive. The present location of pyrites is but a link in a chain of alternate sources for elemental sulphur that are being tracked down systematically to meet the country's requirements.

* * *

A mining research laboratory will shortly be set up in Dhanbad by the Indian Council of Scientific and Industrial Research. The Institute will conduct research on methods to be adopted to ensure safety in mines. A mechanical engineering research institute is also proposed at Calcutta.

Anti-Knock Plant Planned

Plans for building a plant at Sarnia, Ontario, to manufacture ethyl anti-knock compound by 1956, have been announced by the Ethyl Corporation of Canada.

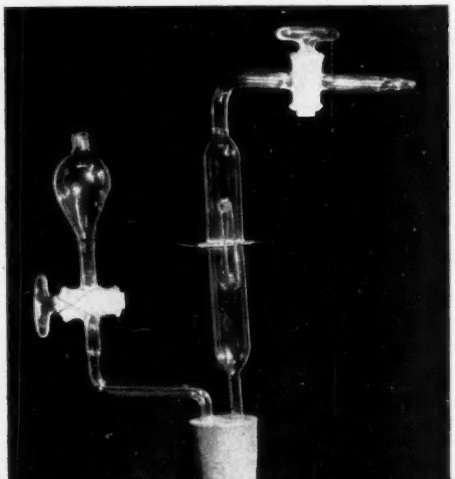


The aluminium ring-oven, and a selection of the patterns of pipette available. The electric heater can be wired to any requirements, power consumption being about 50 watts

Ring-Oven

British Company Makes Weisz Apparatus

DESCRIBED in our issue of 13 November (THE CHEMICAL AGE, 1954, **71**, 1039) was the method and apparatus developed by Dr. Herbert Weisz, of the Institute for Microanalysis, Vienna, for the separation of ions in a single drop. The principle of the process is to place a drop of the solution to be analysed at the centre of a filter paper, fix some ions by the use of appropriate reagents, and wash the other components out of the centre by normal elution techniques. Concentration of the eluate is then achieved by rapid evaporation of the solvent at a determined circumference, brought about by the use of the 'ring-oven.' This is a heated cylindrical aluminium block with a central hole, over which the filter paper is laid, and evaporation takes place around the circumference of the hole. By arrangement with Dr. Weisz, the apparatus is now being manufactured in this country by Perfax Engineering Ltd., Brook House, Torrington Place, London W.C.1. A complete set of apparatus is available, consisting of the ring-oven and its stand, a selection of four different types of pipette, and the glass apparatus for treating the filter paper with gaseous reagents.



The glass apparatus for gaseous fixing of ions. In the separation of copper, iron and nickel, for example, zinc sulphide is placed in the flask and sulphuric acid in the dropping funnel. The evolved H_2S fixes the copper and the other two ions can then be washed out into a circular zone

Portable Electrical Equipment

by A. G. THOMSON

BY the nature of the work they have to perform and the conditions under which they may be used, portable and transportable plant and equipment, when operated on standard supply voltages, constitute a higher risk than permanent or temporary installations. Unlike fixed installations, these two categories of equipment are not permanently and rigidly attached to a building structure or platform and operators cannot be protected against dangerous potential by the provision of fixed earthing conductors. The hazards attending the use of portable equipment are higher than for transportable plant, since the former may actually be held by the person operating it during use; i.e., while it is switched on.

Both portable and transportable plant and equipment should be limited to use in situations where, through reasons of construction or site conditions, no suitable alternative fixed installations are possible. The aim of the design engineer, ideally, is to provide such adequate and well-planned fixed installations that the need for portable and transportable equipment does not arise.

Electrical risks are not so great in a general office building, remote from plants, as in a factory or workshop. On the authority of the electrical engineer and subject to proper selection, installation and maintenance, normal types of domestic equipment are suitable for use in offices, hostels and similar buildings, except where particular risks exist, such as offices with conducting floors, kitchens and lavatories.

Portable Equipment

The greatest risk to an operator using portable equipment connected to an external source of electrical supply is that of shock. The danger is twofold: it may arise directly from the passage of electricity through the body of the operator, possibly resulting in death, and it may also arise indirectly from even a mild electric shock, causing the operator to lose his balance on a ladder or scaffolding due to surprise or involuntary muscular contraction.

Electric shock and its consequences, whether direct or indirect, are progressively reduced as the voltage of the supply at the equipment in the operator's hands is decreased. After consultation with HM Senior Electrical Inspector of Factories, Imperial Chemical Industries decided that for portable appliances the following should be taken as the maximum permissible voltages: for alternating current, 25 volts from earth potential; for direct current, 125 volts from earth potential.

The relationship of the nominal supply voltage to the voltage from earth potential in a system depends on the system characteristics. The provision of a source of supply meeting the requirements of maximum permissible voltages is the responsibility of the electrical department. To provide a low voltage from the normal alternating current mains, a step-down transformer of a fixed type should be employed.

Enclosure of Parts

Portable electrical appliances should be so constructed that all parts which are normally live are enclosed or protected against accidental contact with persons and surroundings, and all metal enclosures which may become live are protected or earthed through a substantial connection. Radiant elements of heating appliances should be so guarded as to minimise the fire risk arising from accidental contact with persons or surroundings.

The equipment should be suitable for the conditions in which it will be used. It should be moisture-proof or corrosion-resistant if it is to be used in situations with excessive humidity or in the presence of corrosive materials or atmospheres.

Portable electrical apparatus should not be permitted in a hazardous area unless in the most exceptional circumstances which make any other alternative entirely impracticable, and then only if the apparatus is of a certified type. Such portable electrical tools as, for example, drilling machines are not flame-proof and cannot, therefore, be employed in situations where an explosion hazard exists.

The use in hazardous situations of portable lighting connected to an external source

Industrial Safety

of supply should be prohibited without the previous issue of a clearance certificate by the competent authority, unless the lamp is certified as intrinsically safe or flameproof for the conditions in which it is to be used, and has been officially sealed by the appropriate electrical department of the company. Where differing conditions are encountered within one factory or works, it is desirable to adopt one type of handlamp, suitable for use in the worst conditions which may be met.

To avoid risk of explosion due to overcurrent, lampholders should be designed to prevent the insertion of lamps rated for less than half the supply voltage to the lampholder. The cable entry should be designed to exclude moisture and to withstand strain without damage to the cable and connections.

Cable for use with portable equipment should normally be of the flexible tough rubber sheathed type, complying with BS.7: 1946. It should have two cores with each conductor not less than 23/.0076 or such larger size as will carry indefinitely without overheating the normal current consumed by the lamp.

Length of Cable

To minimise fire risk due to knotting and kinking, the flexible cable should not be longer than 15 yards from plug to lamp or appliance fitting, any length in excess of this quantity being permitted only on the authority of the electrical engineer to meet special requirements. The cable should be so placed or supported as to prevent mechanical damage thereto and to be clear of passage-ways, stairs and working areas. Should a flexible cable supplying a portable lamp or appliance be damaged, it should be returned immediately to the electrical department.

Means should be provided to prevent abrupt bending of the cable at points of entry to the appliance and its plug unit. Where applicable, control switches should be of the 'deadman' trigger type, switched on all poles, and incorporating a safety latch to prevent inadvertent operation. The 'deadman' feature ensures that the supply to the appliance will be interrupted on release of physical pressure on the trigger. The connecting plug unit should be of the type selected by the factory, for use on the particular system and voltage of the supply at the appliance. It should be distinctive from and non-interchangeable with plug units for any other voltage and system in a selected area.

Transportable Plant & Equipment

Since transportable plant and equipment may be used on any voltage, it can be more dangerous than portable apparatus, which operates at a voltage not exceeding 25 volts AC from earth potential or 125 volts DC from earth potential. It follows that if transportable plant is available for operating at voltages within these limits, it should be preferred to similar equipment designed for operation at higher voltages.

The construction should be such that all parts which are normally live are enclosed or protected against accidental contact with persons or surroundings; and that all parts made of material which can conduct electricity, but which are not intended to do so in normal use, are protected or earthed through a substantial connection.

Interference with electrical equipment installed on transportable plant should be reduced to the practicable minimum by the use of locks or other suitable means.

Trailing cables used with transportable plant should provide a sound connection between the main framework of the unit, through its main earthing terminal, and the earth system at the point where connection is made to the electric supply. If a main earthing terminal is not supplied with the equipment, one should be installed.

The conductors used for the earthing of all metal covers, frames, conduits and accessories to the main earthing terminal should have a conductance equal to that of the largest live conductor, but in no case less than that of a 0.0225 sq. in. copper conductor.

Safety in the use of transportable equipment depends very largely on the durability and adequacy of the electrical connections, particularly to earth. Connection to a supply should only be undertaken by a competent and reliable electrician, who is fully conversant with the requirements in regard to safety. Before being connected the equip-

ment should be inspected by the electrical department and passed as safe for use.

The cable should be to the relevant British Standard Specifications 7:1946, 708:1940 or 1116:1943, or an equivalent, on the authority of the electrical engineer, where special site conditions prevail. All flexible cables used with transportable apparatus should be multicore cables containing an earth conductor having a cross-sectional area and conductance not less than those of the largest of the live conductors contained in the cable.

Equipment operating at voltages exceeding 25 volts AC or 125 volts DC, but not exceeding 250 volts AC or DC from earth potential, should have a metallic armouring or screening enclosing all conductors of the circuit. Equipment operating at voltages exceeding the latter values should have an iron or steel armouring enclosing all the conductors of the circuit. The armouring and screening should have a conductance not less than half that of the largest of the live conductors in the cable or equal to the conductance of a 0.0225 sq. in. conductor, whichever is the lesser. The length of cable attached to transportable equipment should be as short as is reasonably practicable and in one piece. In cases of emergency cable couplers may be permitted, but they should be of the bolted type to prevent interference.

Non-Interchangeable Plugs

It should not be possible in any circumstances for plug units for use on a particular voltage and system of supply to be inserted into sockets connected to a different voltage or system of supply. Transportable electrical equipment should be provided with over-current protection to guard against risks of burns to an operator or of fires arising from overheating.

For the same reasons, it is desirable that equipment operating on voltages exceeding 25 volts AC or 125 volts DC from earth potential should be provided with an instantaneous earth leakage. In the case of equipment operating at voltages exceeding 250 volts, AC or DC, low voltage pilot cable circulating current protection should also be supplied.

Transportable equipment should not be used in hazardous atmospheres unless a clearance certificate has been issued by the competent authority.

Industrial Safety

Issue, Inspection & Maintenance

Portable and transportable plant and equipment are more open to abuse and careless handling than are fixed installations. It is essential, therefore, from considerations of safety, to ensure that all such equipment is kept in first-class order by close supervision of its use and condition. This can only be achieved by a system of registration and issue.

Each item should have a serial number or other identification mark in durable form in a readily visible position. The particulars and history of each appliance should be recorded in a register maintained by the electrical department, who should be responsible for the issue in safe electrical condition of all portable and transportable plant and equipment. The register should give full details of the appliance, the date of issue for service, particulars of each withdrawal from service, and particulars of all tests and repair work carried out.

Where possible, the user should be held responsible for care in the use of portable and transportable electrical equipment, for the return of portable apparatus, and for making available transportable plant to the electrical department for test and repair. Issues of equipment should be made only at the written request of the responsible plant official and subject to a satisfactory test immediately before use.

The electrical department should notify the user when equipment becomes overdue for inspection, a formal notice of withdrawal from service being dispatched immediately after the lapse of the prescribed period of use between inspections. Portable equipment should be inspected at least every three months if non-flameproof and once a week if flameproof and intrinsically safe. In addition, transportable plant should be overhauled at periods not exceeding six months.

Acknowledgment is made to Imperial Chemical Industries for the information on which this article is based.

Safety Notebook

PROCEEDINGS of the fifth conference on chemical works safety organised by ABCM are now available in the form of a booklet (3s. post free from the association's Finance Officer). The conference, held at Harrogate in November, included visits to I.C.I. plants at Wilton and Billingham, and at the end an I.C.I. team answered questions in a quiz session.

Asked about disciplinary action if safety precautions were disregarded, the team explained that 'in general our workpeople realise that disregard of safety precautions is anti-social and they often correct each other.' In flagrant cases at Billingham, the nature of the punishment is usually fixed by the plant manager after he has taken all the circumstances into account and considered what action has been taken in previous similar circumstances. At Wilton, where many of the men employed are new to the chemical industry, it was decided that discussion with the men on the causes of accidents produces more intelligent co-operation than disciplinary action, but action is taken when an offence is repeated. Details of disciplinary action are circulated to works managers so that there will be uniformity throughout the factory.

One delegate said that in nearly 30 years' experience of engineers' shops, that at Wilton was the first he had seen with no 'pin-ups.' The explanation: 'Men are discouraged from putting up "pin-ups" on the grounds of good housekeeping. As the walls of the workshop are of steel and brick, drawing pins don't stick.'

In answer to a question about 'accident proneness' it was stated that at Wilton there had only been one or two cases which were dealt with by the safety officer discussing the problem with the men. In one case it was found that the man needed to wear glasses. 'A careful approach to this problem is required if the men concerned are not to be discouraged from reporting accidents,' warned the team.

* * *

NEWMAN Industries Ltd., Yate, Bristol, announce that their range of totally enclosed flameproof motors are now CSA approved. The Canadian approval (No. 13809) covers both the fan cooled and the naturally cooled models and includes the foot mounted, flange mounted and combined mounting types. Newman barrel-type, steel frame, flameproof motors, designed expressly for use in the mining industry, are also covered by this CSA approval so that the complete range can now be supplied to Canada for use under Canadian hazardous duties Class 1, group D and Class 2, groups F and G.

These Newman motors are all rated to comply with BS.168:1936 and are flameproof in accordance with BS.229:1946 and are Buxton Certified for Gas Groups I, II and III.

* * *

AFTER a good deal of research into the special needs of industrial glove users, G. Waddington & Son Ltd., Newland, Hull, have produced a new handbook describing some of their range of 'Furno' industrial gloves. The handbook gives hints on the best patterns for particular needs, and goes on to describe types of gloves for different industries. In soap manufacture, for example, single palm chrome leather gloves are used. PVC and rubber gloves are also supplied, and the handbook contains a section illustrating a few of the patterns manufactured to BSI specification.

* * *

PROBLEMS of manipulating bungs, plugs, caps and other forms of closure are manifold. Even when the British Standards committee which has for some time been considering the matter has arrived at its conclusions, there will remain in use for a considerable time a large number of containers with closures of varying types and sizes—many in poor condition. Separate tools of the straight or cranked lever type, even those with multipurpose ends, are generally either slow to manipulate, easily lost or insufficient in scope.

A simple but ingenious device being marketed by Meigh Castings Ltd., Cheltenham, disposes a number of different tool bits

round a circular frame. The frame becomes a double lever, on which it is easy to exert a downward pressure while turning, thus overcoming the tendency of the tool to 'ride' in a worn or tapered recess. The sweep of the frame prevents fouling the border of a drum with the operator's hands or part of the tool, and the assembly is light, strong and difficult to lose, since it can be hung in a conspicuous place. The 9 in. diameter of the frame gives good levering power for all but badly corroded bungs, and for these a 14½ in. forked lever is available. The standard design of key manipulates 15 different types or sizes of bungs, plugs and caps, including three sizes of banded steel caps. It is made in non-sparking alloy and, therefore, the danger from explosions is minimised.

* * *

THE Executive Council of the National Smoke Abatement Society has passed a resolution (at a meeting on 27 January 1955) in which it 'declares its firm support for early and effective action on the lines recommended by the Beaver Committee on Air Pollution.' The resolution continues: 'Recognising that this necessitates the introduction, without delay, of legislation, the Council welcomes the stimulus to such action by Mr. Gerald Nabarro, MP, in using his first place in the ballot for Private Members' Bills to introduce a Clean Air Bill, and urges that during the present session of Parliament, HM Government should without fail either accept responsibility for adapting and supplementing Mr. Nabarro's Bill, or substitute for it a single comprehensive Government measure.'

* * *

KNOTTED handerchiefs in polythene bags were sent to all the employees in the I.C.I. polythene works at Wilton as a reminder of the works' safety week from 24 to 28 January. The handkerchiefs carried a safety sign, and a lapel badge showing the same sign was also distributed. The plant has recently completed 300,000 working hours without time being lost through accidents, but occasional minor mishaps have taken place, mainly through carelessness.

During the week, which was designed to emphasise the human element in safety, there was a separate theme for each day laying stress on various aspects, such as the use of hand tools, good housekeeping, keeping to rules and regulations, etc. A large

Safety Notebook

proportion of junior supervision staff and members of the Plant Safety Committee were given a two-day safety course and managers and foremen gave 'pep talks' to their men at various times. Prizes of £10, £5 and £2 10s. were awarded in a competition in which various factors contributing to safety had to be placed in order of importance.

The prizes were presented by Mr. G. A. J. Begg, chief engineer of I.C.I. Alkali Division, who said that in America workmen looked after themselves better and did not expect to be 'mollycoddled' or safeguarded from their own foolishness. Mr. L. P. Bayly, works manager, announced that the safety week had already produced results.

* * *

SEVERE fire and water tests of silicone (class H) insulation have, it is claimed, proved that it repels moisture and will not support combustion, thus reducing explosion hazards to a minimum. It has also been demonstrated that the dielectric strength of class H insulation greatly exceeds that of class A and B insulation, and that there is little change in the dielectric strength in the 200 to 250° C range.

This class of insulation has been used in the new range of Brentford Green Seal safety transformers. Details of the tests with further information on the transformers is obtainable from a booklet issued free by Brentford Transformers Ltd., Kidbrooke Park Road, London S.E.3.

Rocket Fuels & PVC

IN our article last week on 'Handling Rocket Fuels' (p. 322), injudicious writing has unfortunately given the wrong impression. We said: 'Previous HTP hoses were made entirely of Molene . . . . but they did not prove very satisfactory in service due to lack of flexibility at low temperatures, liability to kink and collapse, and a relatively short life.' It was in fact PVC of the ordinary type which was found unsatisfactory, and Molene is a specially-compounded PVC, developed to be compatible with HTP. Our apologies to the Compoflex Co. Ltd.

Meeting at Geneva

Chemical Industries Committee of ILO

FACTORS affecting productivity in the chemical industries, with special reference to work study and systems of wage payments, are to be discussed at the Fourth Session of the Chemical Industries Committee of the International Labour Organisation which will open in Geneva on 7 February and is expected to continue until 19 February.

Safety & Hygiene

Other items to be discussed are problems of safety and hygiene, particularly the classification and labelling of dangerous subjects and the general report. The main points on the general report are the action taken in the various countries in the light of the conclusions adopted at the previous session; steps taken by the International Labour Office to follow up the studies and inquiries proposed by the committee; and recent events and developments in the chemical industries.

The United Kingdom Government will be represented at the meeting by Miss M. Towy-Evans, Chief Personnel Management Adviser, Ministry of Labour and National Service, and Mr. D. Matheson, Chemical Inspector, Ministry of Labour and National Service.

The employers' representatives will be Mr. S. Chapman, secretary, Association of Chemical and Allied Employers, and Mr. E. T. Grint, chief labour officer, Imperial Chemical Industries Ltd. They will have as advisers Mr. I. E. Baggs, personnel manager, Imperial Smelting Corporation Ltd., Avonmouth, Mr. C. Bellingham-Smith, principal assistant (International) British Employers' Confederation, Mr. J. C. H. McEntee, general manager, Wilton Works, Imperial Chemical Industries Ltd. and Mr. A. H. Merrie, central labour department, Imperial Chemical Industries Ltd.

Workers' Representatives

The workers' representatives will be Mr. E. Higgins, National Officer, Chemical and Allied Trades, Transport and General Workers' Union and Mr. J. Matthews, M.B.E., National Industrial Officer, National Union of General and Municipal Workers.

The third session of the committee, held in Geneva in September, 1952, was attended by representatives from 16 countries.

Transcontinental Chemicals

THE first I.C.I. tank wagons for the export of chemicals to the Continent recently came into service. Previously this traffic has been carried on in tank wagons hired from overseas, because the normal I.C.I. tankers are not built to the RIV (Regulamento Internazionale Veicoli) standards obligatory all over Europe. The new tankers, specially built for this traffic, have the longer wheel bases and larger superstructures commonly found on the Continent, and are fitted with roller bearings to minimise the risk of breakdown, and with compressed air brakes.

Since 1948, when there was a single delivery to Frankfurt, the practice of despatching chemicals in tank wagons to the Continent has increased considerably. Delivery can now be made in Belgium, France, Holland, Denmark, Sweden, Germany, Switzerland and Italy. Customers in these countries are aware of the advantages of receiving bulk deliveries of liquid products, and often make orders conditional on bulk delivery.

IN THE EDITOR'S POST

Manchester's First

SIR,—My attention has been drawn to the letter you have received from the managing director of Griffin & George Ltd., regarding the opening recently of our new showrooms, offices and warehouse in Manchester, in which he takes exception to statements made in connection therewith. (See THE CHEMICAL AGE, 1955, **72**, 240.)

Having considered the matter further, there would appear to be no reason to withdraw from any of the statements we made, particularly that statement referring to the fact that these showrooms are the first in Manchester which are equipped as a laboratory, with various types of benches both in wood and metal of which we are the pioneers, and where we are making available for display a large array of instruments relating to all branches of science.

I would therefore, content myself with saying, having knowledge of the premises of Griffin & Tatlock Ltd. in Manchester, I am quite prepared to let the scientist judge for himself.

Yours faithfully,

J. E. C. BAILEY,

Managing Director,
Baird & Tatlock (London) Ltd.

CATALYSTS, SPECIAL COMPOUNDS & CHEMICAL RESISTANT MATERIALS. General Editor, E. Molloy, Advisory Editor, E. Carr. George Newnes Ltd., London. 1955. Pp. x + 222. 21s.

The advisory editor to this book assures the reader in his preface that considerable thought has been given to the arrangement of the various chapters to ensure a concise sequence.

The sequence is scarcely logical; each section is written by an authority on the particular subject dealt with and each is concise. However, it is very difficult to see what relationship, if any, the sections on special products such as silicofluorides, benzoates, ethylene glycol, dichlorodiethylether and dicyandiamide bear to the rest of the book.

The book begins with sections on catalysts, including the platinum metals as catalysts, followed by sections on activated carbon and its applications, catalytic gas purifiers and ion exchange materials. It ends with sections on chemical engineering materials of construction, including a survey of corrosion-resistant metals and alloys, industrial ceramics, refractory cements, acid- and alkali-resisting cements, carbon and graphite, plastics and glass and their uses in chemical industry. Between these two topics is inserted the above-mentioned material on so-called special compounds. Sections on corrosion and the theory of corrosion phenomena might well have replaced this material, and it would have been far better to have devoted the whole book to the single topic, chemical-resistant materials.—R.L.

ARBEITSGEMEINSCHAFT FUR FORSCHUNG DES LANDES NORDRHEIN-WESTFALEN, HEFT 21. Lectures by R. Schwarz and K. Alder. Westdeutscher Verlag, Cologne. 1954. Pp. 62. DM.5.20.

The 'Arbeitsgemeinschaft für Forschung' seeks to promote contact between various branches of science, and between pure and applied research. Examination of a list given in the back of this book shows that the lectures sponsored by this organisation cover a very wide field, which includes mathematics, physics, chemistry, biology and medicine, as well as those sciences which the Germans call 'Geisteswissenschaften.'

This book contains two lectures on chemical topics which were given in May 1952. Professor Schwarz's contribution—'Wesen und Bedeutung der Siliciumchemie' (16 pages) emphasises the great diversity of silicon compounds by giving the reader illuminating glimpses at the chemistry of the silicates, silicon halides and silicones.

The second lecture is a real masterpiece. It is entitled 'Fortschritte in der Synthese der Kohlenstoffverbindungen' and discusses the synthesis of cholesterol and of certain terpene derivatives. However the title is misleading; Professor Alder gives more than a mere account of 'recent advances.' His historical introduction shows us the *raison d'être* of organic chemistry, and the discussion of the syntheses mentioned above illuminates its aims, problems and procedure. Anyone who has a nodding acquaintance with organic chemistry will find this lecture intelligible and stimulating, and the specialist will derive much pleasure from the way in which Professor Alder puts the subject into perspective.—PETER SCHWARZ.

SOLVENT PROPERTIES OF AMPHIPHILIC COMPOUNDS. By P. A. Winsor. Butterworths Scientific Publications, London. 1954. Pp. 207. 40s.

This is the first comprehensive theoretical account of the solvent behaviour of solutions of surface active substances such as soaps, detergents, and emulsifiers. The author's treatment of the subject is non-mathematical, but the concepts are developed logically from first principles and are generally applicable.

No new theory is propounded but an attempt has been made to collect and collate theoretical material already proposed by many of the authorities in the field so as to

provide a single coherent exposition. The attempt is completely successful. A generalised picture of solvent behaviour is created to which the known phenomena can be referred. It is emphasised in the preface that no attempt has been made to apply the theory to more than a few selected typical examples, and likewise the formidable patent literature upon the subject of surface active material is not covered even in the bibliographies. The theory explaining the solubilisation of water-immiscible liquids with aqueous solutions of surface active agents is extended to cover solubilisation in non-aqueous solutions.

Topics as varied as emulsion polymerisation and the colour change of indicator dyes in contact with amphiphilic solvents are dealt with, although the effect of the solvents upon the crystallisation of inorganic salts is not discussed.

One of the most stimulating chapters is that describing the interpretation of the X-ray diffraction patterns produced by detergent solutions in terms of intermicellar equilibrium and the determination of micellar size from measurements of the intensity of scattered light.

The text is supplemented by a very large number of graphs, tables and diagrams, and there are many extensive bibliographies. A useful and unusual feature, but one very welcome in view of the complicated nomenclature of detergents, is the provision of a formula index. This book may be considered not the least of the author's many contributions to the theory of amphiphilic compounds.—J.R.M.

TRAITÉ DE MICRO-ANALYSE MINÉRALE. Tome I. By C. Duval. Presses Scientifiques Internationales, Paris. 1954. Pp. 552. Fr.3,000.

This is the first volume of several which will together survey the micro-analytical chemistry of the elements. It is concerned with hydrogen and its isotopes, the alkali metals, alkaline earths and lanthanons.

Each element is considered separately and for each is listed those methods of analysis, both qualitative and quantitative, which Professor Duval considers to be reliable, and which have in general been used in his own laboratories; apart from this the methods are not critically assessed. The procedures are not limited to 'classical' ones; instrumental methods are cited constantly and this gives to the book a great deal of its value. Methods are often given only in outline but sufficient detail is usually presented for the experienced analyst. In addition very comprehensive lists of references are appended so that more detailed information may often be obtained.

In the qualitative sections large numbers of tests are given which involve chemical microscopy. These are of necessity illustrated by adequate sketches rather than by photographs. Indeed the number of diagrams of all kinds, and especially of apparatus, is a feature of the book. So is the number of tables of relevant data, which add greatly to its value as a laboratory textbook.

Theoretical discussion is mostly lacking, but this is the author's deliberate intention for he states in his preface that adequate books on the theory of analytical procedures already exist in the French language.

For each element there are preliminary sections dealing with such matters as its natural occurrence, its properties and those of its compounds, its uses and the means of bringing its compounds into solution.

Reading has failed to reveal any omissions of importance although such might become apparent only after the book has been used at the bench. The lack of an index sometimes makes work a little more tedious but it would be an unenviable task to produce ore from such a condensed mass.

In the reviewer's opinion this book is a very useful addition to the literature of micro-analytical chemistry. Analysts who are not specialists in small-scale work will also find in it a great deal of material that is of interest to them.—F. HOLMES.

WORTERBUCH DER PHYSIOLOGISCHEN CHEMIE. By Hanns Dyckerhoff. Walter de Gruyter & Co., Berlin. 1955. Pp. 175. Cloth, DM.18.50.

According to the preface, the purpose of this dictionary is to provide medical practitioners with a ready source of information about the mechanism of metabolic processes and about the chemical substances involved.

The book is far from satisfactory. Some of the entries are confusing, many of the formulae are very badly printed, and in a number of instances the material is grossly inaccurate or out of date. Nearly every page contains a serious misprint or other error. This books falls far below the high standard usually maintained by its publisher.—J.C.P.S.

HOME

Keeping the Derwent Clean

A High Court injunction granted two years ago restraining Derby Corporation from polluting the River Derwent will cost the town over £500,000 during the coming year. The money will be spent on the first instalment of sewage works extensions, which will cost in all over £2,000,000. Contribution towards part of the scheme is being made by British Celanese Ltd., who have a factory at Spondon.

Work Study for Hicksons

Following considerable expansion at their Castleford works, and the acquisition of the Huddersfield works of J. W. Leitch, Hickson & Welch (Holdings) Ltd. have decided to organise a small work study department. This will be initiated at Castleton, but eventually it is decided to extend investigations to other companies in the group.

Man-made Fibres Building at Leeds

Industry has contributed £100,000 for the construction of a new building at Leeds University which will be used to promote education and research into synthetic fibres at Leeds University. The building, which should be in use next year, will house the Man-made Fibres Division of the Department of Textile Industries at the University.

US Firms for Scotland

Lord Bilsland, chairman of the Scottish Council (Development and Industry) is at present in the USA undertaking negotiations with American firms planning to set up plants in Scotland. Of three firms with which negotiations are being carried on, one is engaged in a specialised branch of the chemical industry.

I.C.I. Research Laboratories Renamed

Imperial Chemical Industries Ltd. are renaming their Butterwick Research Laboratories, located at The Frythe, Welwyn, Herts, in memory of the late Sir Wallace Akers, C.B.E., F.R.S. These laboratories, which will now be known as the 'Akers Research Laboratories,' were formed shortly after the end of the war to undertake fundamental and long-distance research work in various branches of science. Sir Wallace, in his capacity of I.C.I. Research Director, took a keen interest in the project.

Rival to Aspirin?

Claims for a new drug are made in a letter to the current issue of *Nature* (1955, **175**, 206) by a formidable team of research workers from Allen & Hanburys Ltd. and CRL. A major component of the 'brown dust' residues from the sublimation process for the purification of salicylic acid is 4-hydroxy-isophthalic acid, and research has shown this substance to be less toxic and more effective as an analgesic than aspirin; antipyretic activity appeared to be about equal. Clinical trials are now in progress.

BISOL Acetic Anhydride Reduced

British Industrial Solvents announce that the price of BISOL acetic anhydride has been reduced by £7 per ton with effect from 31 January. The new prices per ton, delivered UK in returnable drums, range from £121 for 10-tons to £126 for single 90-gal. drum lots. The allowance for deliveries in 2,500-gal. tank wagons has been increased from £1 to £2 per ton; extra charges for delivery in small containers remain unchanged.

Sulphur Filter Cake

The Board of Trade have announced that they are considering an application for the exemption from import duty of: 'Sulphur wastes and residues, being wastes and residues of which uncombined sulphur constitutes not less than 70 per cent of the dry weight.' Any representations from interested parties be addressed to the Board of Trade, I.M.1A Division, Horse Guards Avenue, London S.W.1, not later than 26 February, 1955.

President Visits Carbon Black Plant

Mr. Thomas D. Cabot, president of Godfrey L. Cabot Inc., Boston, USA, has completed a visit to his Ellesmere Port carbon black plant. Complaints from householders that carbon particles were settling in their washing were investigated. A company spokesman said on 28 January: 'Already we have spent large sums of money attempting to solve this problem. Mr. Cabot was strongly interested and we are getting closer to a solution.' As reported last week complaints have been made to the council about soot from the plant.

• OVERSEAS •

Kwinana Starts

The Kwinana oil refinery of British Petroleum Ltd. started up on 1 February. In about six weeks its first products will flow by pipeline to Fremantle for distribution throughout Western Australia.

Natal Plastics Factory

A factory to produce plastics and solvents is being built at Natal, South Africa, and is expected to be in full production by the end of the year. Its products will range from caustic soda to PVC.

Fertiliser Plant for Colombia

A contract has been signed by the Colombian Industrial Development Institute with an Italian firm to construct a fertiliser plant at the oil refinery city of Barrancabermeja. The plant will be operated by Industrial Colombiana de Fertilizantes SA and will produce ammonia, urea and nitric acid. It will cost about $12,000,000.

US Oil Merger Planned

The directors of two American oil companies have agreed in principle to a plan for a merger, and it will shortly be submitted to stockholders. The companies concerned are Sunray Oil Corporation and Mid-Continent Petroleum Corporation; the new company would be known as Sunray-Mid-Continent Oil Company.

Company for Dead Sea Bromine

A public company for the exploitation of bromine extracted from the Dead Sea is to be established shortly. It will be a subsidiary of the Israel Potash Company, and will be managed by Dr. J. Picker, who has hitherto been in the Israeli Government service. The enterprise will produce various industrial and pharmaceutical products.

US Products for Canada

L. Sonneborn Sons Inc., New York, has completed arrangements for packaging and distribution in Canada of its building products specialties. Full scale manufacturing is anticipated after a sufficient market is developed. The products, to be handled by Huntingdon Laboratories Ltd. of Toronto, include chemicals for treatment of floors, waterproofing materials for masonry and protective coatings for other applications.

H_2SO_4 Plant Tenders Sought

Tenders are being sought for the installation at Avilés of two chemical plants. One is for a pyrites roasting plant of a 400 metric tons per day capacity and the other is for a plant to produce 540 metric tons of sulphuric acid per day. Full details can be obtained from Liasta, 40 Primero, Madrid. The tenders must be submitted before 21 March, 1955.

Indian Tariffs

The Indian Government have accepted a recommendation of the Tariff Commission that the protection which at present applies to stearic acid and oleic acid should be extended to cover derivatives of these acids also and should continue until 31 December, 1957. It has also been decided in consultation with the commission that a uniform protective duty of 31½ per cent *ad valorem* or eight annas per lb., whichever is the higher, should be levied on the acids and their derivatives.

Australian Aluminium Plant to Start

Production of alumina from Australian bauxite is expected to begin in the middle of February at the Australian Government's aluminium plant at Bell Bay, Tasmania.

Import Licences for Japan

The Board of Trade have announced that they have been informed by Her Majesty's Embassy, Tokio, that the Japanese authorities have invited importers in Japan to apply for import licences before 7 February for rubber accelerators, vinyl chloride stabilisers, and synthetic perfume. Importers were also invited to apply before 1 February for licences for titanium dioxide from any area.

New Newsprint Factory

India's first national newsprint factory at Nepanager (Madhya Pradesh) went into production on 11 January. Full production of 100 tons a day is expected to be reached in another three months. The newsprint is derived from chemical pulp from bamboo and mechanical pulp from salai wood, the first time this wood has been used for the purpose anywhere in the world. At present, imported chemical pulp is used, but this will stop when the chemical section is completed, probably in October.

· PERSONAL ·

The Lord President has appointed SIR CHARLES DODDS, M.V.O., F.R.S., D.Sc., Ph.D., M.D., F.R.C.P., M.D. (h.c.), Melbourne, F.R.I.C., F.R.S.E., Courtauld Professor of Biochemistry in the University of London and Director of the Courtauld Institute of Biochemistry at the Middlesex Hospital, to be a member of the Advisory Council for Scientific and Industrial Research. Sir Charles fills the vacancy caused by the retirement of the late SIR WALLACE AKERS, C.B.E., B.A., D.Sc., F.R.S., F.R.I.C., in September 1954.

At the annual general meeting of the Scottish Section of the Society for Analytical Chemistry on 19 January the following were elected officers for the coming year: *Chairman*, DR. F. J. ELLIOTT, M.Sc., Ph.D. (Dunelm), F.R.S.E., F.R.I.C.; *vice-chairman*, DR. MAGNUS PYKE, B.Sc. (McGill), Ph.D. (Lond.), F.R.I.C. *Hon. secretary and treasurer*, MR. J. A. EGGLESTON, B.Sc., A.R.I.C. (Boots Pure Drug Co., Ltd., Motherwell Street, Airdrie, Lanarkshire).

MR. WILFRED A. HARDY, A.C.I.S., has taken up an appointment as company secretary to Winston Electronics Ltd., Hampton Hill, Middlesex.

At their meeting on 27 January the board of Imperial Chemical Industries Ltd. elected SIR FRANK EWART SMITH, M.A., M.I.Mech.E., M.I.Chem.E., to be a deputy chairman. The company has two other deputy chairmen, MR. A. J. QUIG and MR. S. P. CHAMBERS, C.B., C.I.E., B.Comm., M.Sc. (Econ.). Born at Loughton, in Essex, in 1897, Sir Ewart was educated at Christ's Hospital School and Sidney Sussex College, Cambridge. He joined Synthetic Ammonia & Nitrates Ltd. (the forerunner of I.C.I.'s Billingham Division) in 1923 and for 19 years served at Billingham in various engineering and managerial posts. In 1932 he was appointed chief engineer of the Billingham Division. From 1942-45 he was chief engineer and superintendent of armament Design at the Ministry of Supply. He was appointed to the board of I.C.I. in 1945, becoming technical director in 1946. He was knighted in 1946. Sir Ewart is chairman of the British Productivity Council.

Two new joint managing directors (commercial) of the Billingham Division of I.C.I. are MR. D. M. BELL, B.Sc., and MR. J. W. KERR, B.Sc. Their appointments took effect on 1 February. Mr. Bell joined the Dyestuffs Division of I.C.I. in 1937 as a commercial assistant in the sales department at Hexagon House, Manchester. In 1943 he was transferred to London and became assistant to the Southern Regional Dyestuffs sales manager, and three years later was appointed to that position himself. He became a director of the Billingham Division, in charge of organic sales, in 1953. Mr. Kerr had been commercial director of Billingham Division since 1951. In 1927 he joined the Explosives (now Nobel) Division as a chemist, after training in France and Germany. He later served with the head office of the company in the development department. From 1934 he held senior appointments in the company's sales organisation and in 1946 he went to Billingham as commercial manager.

Appointed directors of the Billingham Division of I.C.I. from 1 February are MR. K. H. L. COOPER, B.A., and MR. J. A. L. YOUNG. Mr. Cooper has been at Billingham since 1937, after some years at head office and with the Plastics Division. In 1951 he was appointed sales control manager for fertilisers. Mr. Young, who qualified as a chartered accountant, was made head of the Pensions and Assistance Funds Department in 1951.

MR. CHARLES HEMM, general works manager and a local director for the last six years of Dunlop's factory in Cambridge Street, Manchester, has been appointed their director of projects (general rubber goods). He will concentrate on major developments and the extended use of synthetics in the industrial field, both at home and overseas. Mr. Hemm joined Dunlop in 1927 from the managing directorship of an electrical engineering firm as general manager of the New Eccles Rubber Works. He was general manager of the Barrage Balloon Division during the last war, controlling the dispersal factories of the Ministry of Aircraft Production to whom he acted as production adviser on all low-pressure inflatable devices.

MR. JOHN MADDER WALLACE, a director of Blaw-Knox Ltd., has been elected chairman of the company.

GEORGE R. BRYANT, vice-president of The Texas Company for the past four years, has resigned his position to become president of Jefferson Chemical Company, Inc., owned jointly by American Cyanamid Company and The Texas Company. Mr. Bryant succeeds MR. P. M. DINKINS, who has served as president of Jefferson Chemical since 1946. Mr. Dinkings is retiring from active service with the company, but will continue to serve Jefferson Chemical in a consultative capacity.

Continued growth of the Chemical Division of Celanese Corporation of America and plans for future expansion have necessitated a reorganisation of the product development department. As a consequence, three operating groups—sales development, new chemical development and market research—have been established within the department. ROBERT J. DAVIS has been named supervisor of the sales development group, HOWARD L. PILAT supervisor of the new chemical development group and WINTHROP M. BARNES supervisor of market research. In addition special projects of the department will be established as the need develops. The first of these groups to be launched is in functional fluids, for which HOWARD G. ZBORNIK is project leader.

MR. THOMAS M. CLARK, O.B.E., B.Sc., F.R.I.C., of the city analyst's department, Glasgow, has been appointed city analyst for Aberdeen.

After more than 52 years' service at Staveley, MR. BRADBURY, the commercial manager of the Staveley Iron and Chemical Company, has retired on pension. He will be succeeded by MR. J. D. BERRESFORD, the deputy commercial manager.

Obituary

It is with regret that we announce the sudden death on Sunday, 30 January, of SIR EDWARD MELLANBY, G.B.E., K.C.B., M.A., M.D., Hon. Sc.D., Hon. D.Sc., Hon. LL.D., F.R.S., F.R.C.P. He was 70.

Educated at Cambridge and St. Thomas's Hospital, London, Sir Edward became a demonstrator in the Department of Physiology at St. Thomas's and later Professor of Physiology at King's College for Women, London. In 1920 he became Professor of Pharmacology in the University of Sheffield and Honorary Physician to the Sheffield Royal Infirmary.

Sir Edward Mellanby made a detailed study of the action of vitamin D with particular reference to the anti-vitamin effect of certain cereals, and his work pointed the way to the modern method of the cure and prevention of rickets. He also studied the functions of vitamin A.

In 1933 he became secretary of the Medical Research Council, and during the war was chairman of a number of committees engaged in medical research. He retired from his position with the Council in 1949, but up to the end of his term of office maintained his interest in active research, as his work on the effect of Agenised flour on dogs showed.

Sir Edward's work brought him a number of prizes and honorary degrees from British and overseas universities. He was chairman of the International Conferences for Standardisation of Vitamins in 1931, 1934 and 1949 and chairman of the International Technical Commission on Nutrition. He is survived by his wife, Lady Mellanby, who shared fully in his interests.

The death has occurred of MR. JAMES CUTHBERTSON, of James Cuthbertson and Co. Ltd., chemical brokers of St. Vincent Street, Glasgow. A graduate of Glasgow University, Mr. Cuthbertson was a member of the Trades House of Glasgow.

Wills

DR. ARTHUR CHESHIRE, D.Sc., of Elton, Eppleworth Road, Cottingham, chief chemist at research laboratories of Barrow Hepburn & Gale Ltd., Beverley, left £24,535.

MR. ARNOLD HORROCKS, of Harrod Drive, Birkdale, of Thomas Horrocks & Sons Ltd., paint manufacturers of Manchester, joint managing director of Lancashire Tar Distillers, and a director of other companies, left £31,768.

Synthetic Rubber Plant Expansion

The Crown-owned Polymer Corporation of Canada is to spend $5,930,000 on a major expansion and modernisation programme at its synthetic rubber-producing plant.

New Textile Dyes

JUST introduced by the I.C.I. are the first four members of an important new range of textile printing dyestuffs—Alcian Blue 8GX, Alcian Yellow GX and Alcian Greens 3BX and 2GX. These Alcian 'X' dyestuffs, as they are to be known, are a development from Monastral Fast Blue, the extremely fast blue pigment discovered in I.C.I. laboratories in 1935.

Monastral Fast Blue was one of the most important synthetic dyestuff discoveries of the century. Being an insoluble pigment, however, its uses were confined to the coloration of paints, printing inks, plastics, leathercloth, etc., for which purposes vast quantities are used today.

Attempts to make soluble derivatives of Monastral Fast Blue suitable for textile coloration met with success in 1947, when I.C.I. introduced Alcian Blue 8G, a turquoise blue dye specially applicable to textile printing. A temporary solubilising chemical group is split off during the printing process, leaving the insoluble—and therefore very fast—dye residue locked in the fibre.

The new Alcian Blue is an improved brand of Alcian Blue 8G, and along with Alcian Yellow GX and the two Alcian Greens forms a very valuable addition to the textile printer's armoury. The new dyes are applied by a simplified process developed by I.C.I. and are specially suitable for use alongside vat and azoic dyes.

Firm Robes the Mayor

THE Mayor of Thornaby-on-Tees, Coun. J. N. Scott, who works in the Stockton Forge division of Head, Wrightson & Co. Ltd., has been presented with a mayoral robe and hat by the firm's chairman and managing director, Mr. Richard Miles. At the presentation Mr. Miles stressed the advantages of co-operation between local authorities and industry.

The Mayor, in his reply, recalled that Sir Thomas Wrightson had been an alderman of the borough and Ald. C. A. Head was mayor three times and presented the mace when Thornaby's charter was granted in 1892. Sir John Wrightson, vice-chairman of the company, mentioned that the town's first mayor was Mr. William Anderson, a director and general manager, Head, Wrightson's at the time.

Personal Note

BORAX Consolidated Limited are preparing an illustrated booklet describing the activities of the company. This is stated in 'a personal note' to the stockholders from the chairman, Mr. D. A. Smith.

The company, he says, supplies its products to nearly the whole world outside the Soviet bloc and is one of the great dollar earners for the sterling area. For over 50 years it has owned mines and factories in California, as well as mines in Turkey and South America. It also owns factories for refining borax in England, France, Belgium, Austria and Spain.

The future for boron is bright and, says Mr. Smith, 'if Britain and the Commonwealth were to lose the output of these valuable deposits and factories the loss would be a heavy one.'

New Colour Range

A NEW range of 101 colours that would be acceptable both to the paint industry and large and important users of paint has been evolved by a committee of the Paint Manufacturers' Co-operation Committee in association with other bodies, including the Royal Institute of British Architects and the British Colour Council.

The range has now been submitted to the British Standards Institution for issue as a new British Standard. It has already been adopted by the Liaison Committee on Building Paint Supplies for Government Departments. Arrangements are being made for displaying the new range at BSI centres and the RIBA.

The work was prompted by the Anglo-American Council on Productivity report on 'Simplification' and began in 1951.

Decontrol in Germany

ALLIED law No. 35, dealing with the deconcentration of IG Farben will be rescinded immediately after the shareholders' meeting to take place in March. After that reamalgamation of the successor companies of the firm will be permissible, but it is not believed that the three main companies will go beyond a measure of co-operation.

It is believed that an Allied law restoring control of the chemical industry to the German Government is to be promulgated.

Law & Company News

New Registrations

Industrial Synthetics Ltd.

Private company. (543,553.) Capital £5,000. Manufacturers of and dealers in all kinds of materials and articles composed wholly or partially of synthetic or raw materials used in the field of plastics, rubber and allied industries, etc. Directors: Stanley F. Reed, Ronald C. Thorpe and Sidney P. Richfield. Secretary: Leslie E. Watts. Reg. office: 59 Sloane Street S.W.1.

Company News

Willows Francis Limited

Consent of the Board of Trade has now been received to the change of name of Willows Francis Pharmaceutical Products Ltd. to Willows Francis Ltd. as from 21 January (see THE CHEMICAL AGE, 1955, **72**, 198).

Colonial Sugar Refining Company Ltd.

Capital expenditure of the Australian Colonial Sugar Refining Co. Ltd. on its refineries has been £A1,000,000 a year for the past two years, and this expenditure rate will continue for several years, says the directors in their interim half-yearly report. The expenditure is to keep pace with refined sugar production in Australia. Sales during the year to 30 September amounted to 470,000 tons, an increase of about 12 per cent over the previous year. Operations of the cellulose acetate section of the chemical company owned by the firm have been hampered in the past six months by low demand and the high cost level in Australia.

Chemie Verwaltungs AG

Chemie Verwaltungs AG has been formed as a holding company in Germany for the Chemische Werke Hüls AG with a capital of DM.81,600,000. Hüls, formerly part of IG Farben, is at present the sole producer of synthetic rubber in West Germany. The shares of the holding company are not to be distributed but will be placed under trusteeship until all claims against the former IG Farben company have been settled.

Dorman Long & Co. Ltd.

A final dividend of 6¾ per cent on the ordinary shares is announced by the board of Dorman Long & Co. Ltd. This, with the interim dividend, is equivalent to the 8 per cent less tax forecast for the year ended 2 October, 1954. Group profit is £6,237,164.

Powell Duffryn Limited

Mr. Justice Vaisey in the Chancery Division on 31 January confirmed a reduction of the capital of Powell Duffryn Ltd. from £16,000,000 to £5,022,522 11s. and sanctioned a scheme of arrangement between the company and its two classes of members.

Varley Pumps & Engineering Ltd.

Varley Pumps & Engineering Ltd., the British subsidiary of Food Machinery and Chemical Corporation of California, USA, has acquired the whole of the freehold of the Ferry Lane, Brentford, property, part of which the firm has occupied for the past two years. The acquisition, it is stated, will enable the firm to carry out an extensive expansion programme and long-term plans for the manufacture of packaging and food processing machinery.

Hickson & Welch (Holdings) Limited

Development programme for Hickson & Welch (Holdings) Ltd. over the next two years and now operating involves new buildings and new plant for extra products and increased output capacity, according to the statement of the chairman (Mr. B. Hickson). Trading profits of the subsidiaries for the year ended 30 September were £343,145, compared with £194,529 for the previous year. The year saw new plants in production involving a wider range of products. As announced last week (p. 341) the group is to increase its capital by issuing 300,000 additional ordinary shares. The meeting is on 18 February.

Change of Name

Following a reorganisation, Lawfer Chemical Co. Ltd. has changed its name and in future will be known as Hoechst Chemicals Ltd. The share capital of the company has been increased to £50,000, and Farbwerke Hoechst AG, Frankfurt (M)-Hoechst, have acquired 50 per cent of the ordinary share capital. A new company has been formed, under the name of Lawfer & Co. Ltd., to handle the other activities of business relating to non-Hoechst products. The conduct of the business of both companies will remain unchanged, under Mr. L. Laufer (managing director) and Mr. Leo W. Ritchie (sales director).

Publications & Announcements

RECEIVED from the Power-Gas Corporation Ltd., Stockton-on-Tees, and from their subsidiary Ashmore, Benson, Pease & Co., are a number of interesting brochures. ABP-Klonne dry gasholders are described in one: essentially these holders constitute a free piston moving within a truly circular steel shell, gas-tightness being effected by means of a grease-lubricated packing ring flexibly mounted on the piston and maintained in even contact with the shell throughout its travel. Calcining plant has for more than 30 years been a speciality of Power-Gas, and the pamphlet describing such plant is illustrated with photographs of both mixed-feed and gas-fired installations.

Third of the brochures describes the manufacture of sulphuric acid from sulphide ores by roasting on the Chemiebau-Zieren system, and a fourth is concerned with Rosenblad heat exchangers and condensers. These are manufactured by rolling up two plates of suitable material within one another to form two concentric spiral passages. There are no joints between the passages, which are made entirely independent by welding the plates together at alternate sides. The fluid to be heated enters at the periphery, flows through the outer passage and leaves at the centre; the hot liquid enters at the centre, flows through the inner channel and leaves at the periphery. This design permits perfect countercurrent flow conditions.

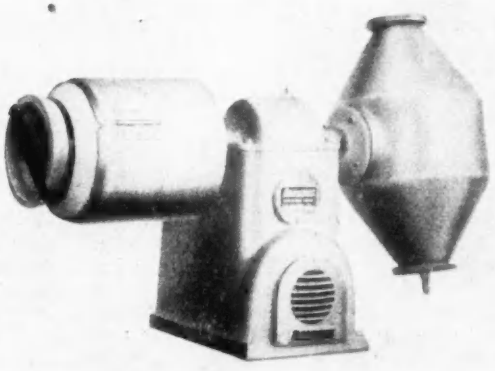
Also available are various reprints, including 'Gasification of Coal in Producers and Water Gas Generators' by P. M. K. Embling; 'Gasholders: Special Applications in the Steel Industry' by T. H. Riley; and 'Desulphurisation of Coke-Oven Gas' by T. H. Williams.

* * *

A NEW booklet on the subject of silver plating has been added to the range of technical literature published by Johnson, Matthey & Co. Ltd., Hatton Garden, London E.C.1. This is not intended to be an exhaustive treatise on the electrodeposition of silver, but deals in a practical manner with the various operations involved in silver plating, indicating suitable methods for most requirements and giving warnings of possible difficulties. It is believed that newcomers to the process will find it a dependable guide, and that even experienced platers may gain new and helpful ideas from it. The operation of silver plating may be subdivided into three main sections—preparation, plating and finishing—and these are considered in the booklet under the appropriate headings. A further section deals with plating troubles and useful appendices are included. The booklet, the reference number of which is 1851, is obtainable from the company free on request.

* * *

PODMORE multi-duty mill is a compact motorised unit which enables a wide range of processes such as wet or dry grinding and mixing, churning, or polishing to be carried out with the minimum expenditure, as a number of different attachments can be supplied to fit the standard three-speed driving unit. Attachable to the double-ended mill



Podmore multi-duty mill, fitted with grinding pot and double-cone mixer

are a double cone mixer; grinding pots in porcelain, stainless steel, or rubber lined; an octagonal barrel for polishing; and a standard fitting for shaking or churning two Winchester quarts. The mill is made by Podmores (Engineers) Ltd., Shelton, Stoke-on-Trent.

* * *

TWO new house labels have recently been designed for the labelling of certain products of A. Boake, Roberts & Co. Ltd., London E.15. These are for industrial and aromatic chemicals: a background of irregular mesh, smoke-grey in colour, and with the ABRAC trade mark in its new form, the letters A—AC in red, and —BR— and underlining in black—and for perfumery compounds: a background in lavender with small white stars, and with the trade mark and name of the company in a decorative border.

* * *

THE popular scientific lectures which are given annually at the Royal Institution were this year delivered by Sir Frank Whittle, consultant to one of the companies of the Royal Dutch/Shell Group, who took as his subject 'The Story of Petroleum.' It is almost a tradition that these lectures include particularly vivid practical demonstrations, and this year Foxboro-Yoxall Ltd. were able to contribute to their success by lending for the occasion an exhibition unit designed to demonstrate the working of automatic control instruments such as might be found in a modern refinery. The unit is a transportable cabinet containing a number of instruments arranged to control the flow and level in a process simulated by a glass tank of coloured water. The front of the unit is a graphic panel with two Foxboro Model 53 Consotrol recorders mounted in a representation of the plant. The unit can be swung round so that the other instruments with their connections and lay-out may be examined.

The flow, created by an electric pump, is measured at an orifice plate by a d/p cell transmitter whose measurements are recorded by one of the Model 53 recorders. Here the desired value is set and control is effected by a Model 59 controller mounted on the head of a valve in the pipe line. The level of the tank is measured by another d/p cell transmitter with an air purged impulse dip leg and this measurement is recorded by the other recorder. As before the desired value is set here and a Model 58 controller, this time mounted on the back of the recorder, controls a valve in the outlet pipe of the tank.

The demonstrator is able to create easily visible changes in the flow and level by varying the settings of the two Model 53 recorders, and as these instruments indicate both a departure from the desired value and the output pressure to the control valve, the response of the latter to changes in the process is easily appreciated. In short, the unit greatly facilitates the demonstration of the principles of automatic control to the non-technical besides permitting close examination of a number of typical modern control instruments while they are actually functioning as they would on a full scale industrial process.

* * *

MADE by Boro' Laboratories & Appliance Co. Ltd., 1 Station Buildings, London S.E.6, the 'Condesco' drip regulator is a liquid drip dispenser with many applications. It consists of a polythene bottle, capacity 40 fl. oz., fitted with a flow control needle valve in Perspex. Working range is 2-180 drops per min.; after initial fall the control rate stabilises to ± 4 per cent, falls as reservoir empties, but in general remains within dosage limits. Below 50 drops per min., drops are 370-400 per fl. oz., and above this rate decrease progressively to 300.

* * *

LIST 1482 from Rhodes, Brydon & Youatt Ltd., Waterloo Engineering Works, Stockport, Lancs, describes the company's range of floor-mounting Fullway Mopumps of the 'Super-Silent' and 'Industrial' types for heating and ventilation, and replaces List 1146. The Fullway Mopump is said to have been the original vertical unit construction pump to form a complete accelerator requiring unit construction pump to form a complete accelerator requiring neither by-pass nor non-return valve, being permanently aligned and easy to install. Standing on its own base, the unit needs only to be brought in line with and coupled up to the heating or ventilation pipes. No further securing is required and holding bolts are not necessary.

* * *

THE production of olefines for manufacturing the synthetic detergent Ultrawet at the Atlantic Refining Company's plant at Philadelphia is described in *Wiggin Nickel Alloys No.* 30, the publication of Henry Wiggin & Co. Ltd., of Thames House, Millbank S.W.1.

Industrial Plant in Glass offers you

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Glass eliminates corrosion.
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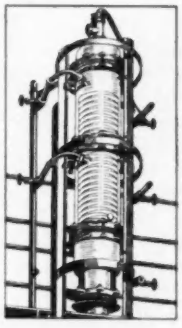


Telephone: STONE 511

Q.V.F. LIMITED

Mill Street, Stone, Staffs.

Next Week's Events

MONDAY 7 FEBRUARY

Royal Institute of Chemistry

Oxford: University Physical Chemical Laboratory, 8.15 p.m. 'Hydrogen Peroxide' by W. S. Wood.

Chemical Society

Cardiff: Chemistry Department, University College, 5.30 p.m. Tilden Lecture, 'Molecular Rearrangements' by Professor M. J. S. Dewar.

TUESDAY 8 FEBRUARY

Chemical Society

Exeter: Washington Singer Laboratories, 5 p.m. 'A Topic in Alkaloid Chemistry' by Professor G. R. Clemo.

Leeds: Chemistry Lecture Theatre, The University, 6.30 p.m. 'Complexones' by Professor G. Schwarzenbach.

Institution of Chemical Engineers

London: The Geological Society, Burlington House, Piccadilly, 5.30 p.m. 'The Mechanism of Drying of Solids' by E. W. Bruce, R. F. Strickland-Constable and Professor D. M. Newitt.

Society for Analytical Chemistry

Stirling: Golden Lion Hotel, 8 King Street, 6.30 p.m. 'Some Properties of Glasses in Relation to Composition' by Professor H. Moore (joint meeting with the Society of Glass Technology and the Stirlingshire and District Sections of the RIC and SCI, to be preceded by a visit to the bottle-making works of Alloa Glassworks Co. Ltd.).

London: Chemical Society Meeting Room, Burlington House, Piccadilly, 6.30 p.m. Meeting on 'Solvent Extraction.'

Society of Dyers & Colourists

Macclesfield: The Canteen, Wm. Frost Ltd., Elizabeth Street Mills, 8 p.m. 'The Dyeing of Terylene Polyester Fibre' by J. G. Graham (joint meeting with Textile Institute).

WEDNESDAY 9 FEBRUARY

Royal Institute of Chemistry

Reading: University, 8 p.m. 'Explosions' by Sir William Penney (joint meeting with Reading University Chemical Society).

Chemical Society

Dublin: Chemistry Department, Trinity College, 7.45 p.m. Tilden Lecture, 'The Role of the π-Electron in Aromatic Chemistry' by Professor H. C. Longuet-Higgins.

Society of Chemical Industry

London: Chemical Society's Rooms, Burlington House, Piccadilly, 6.30 p.m. Food Group domestic meeting, 'The Nutritive Value of Fish Proteins' by D. S. Miller and 'Some Aspects of the Photochemical Oxidation of Ascorbic Acid' by L. C. Baker.

Institution of Chemical Engineers

Chester: The Grosvenor Hotel, 7 p.m. 'Minimum Reflux Conditions for Multiple Feed Columns' by N. L. Franklin.

Parliamentary & Scientific Committee

London: Savoy Hotel, 11.30 a.m. Annual general meeting.

Institute of Fuel

Manchester: Engineers' Club, Albert Square, 6.30 p.m. 'The Acid Dewpoint' by J. R. Rylands.

Manchester Metallurgical Society

Manchester: Lecture Room, Central Library, 6.30 p.m. 'Industrial Applications of Precious Metals' by Dr. J. C. Chaston.

THURSDAY 10 FEBRUARY

Royal Institute of Chemistry

Bolton: Municipal Technical College, 7.30 p.m. 'Some Chemical and Physical Aspects of Bread-making' by S. W. Butterworth.

Chemical Society

Bristol: Chemistry Department, The University, 7 p.m. The Hugo Muller Lecture, 'Some Newer Aspects of the Organic Chemistry of Nitrogen' by Professor G. R. Clemo (joint meeting with RIC and SCI).

Hull: The University, 6 p.m. 'Chromatography'' by Dr. T. I. Williams.

Belfast: Chemistry Lecture Theatre, Queen's University, 7.45 p.m. Tilden Lecture, 'The Role of the π-Electrons in Aromatic Chemistry' by Professor H. C. Longuet-Higgins.

Nottingham: The University, 4.45 p.m. 'Melting and Crystal Structure' by Professor A. R. Ubbelohde.

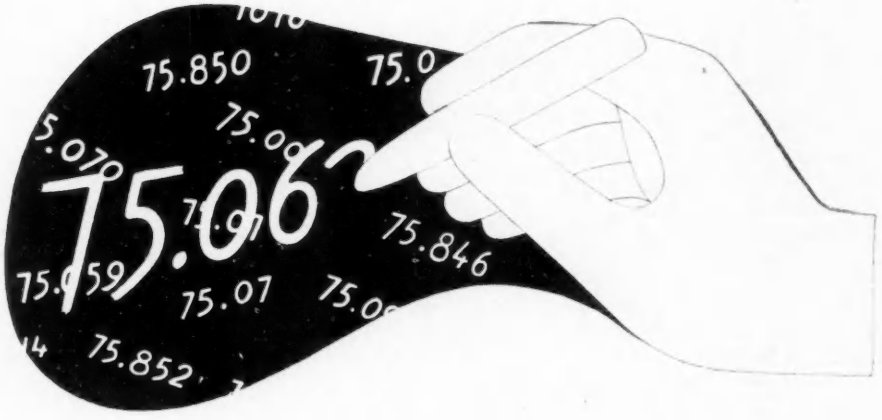
Institute of Fuel

London: The Institution of Civil Engineers, Great George Street, S.W.1, 5.30 p.m. 'Wales Gas Board—Integration of Fuel Supplies' by E. M. Edwards, W. T. Hird, S. L. Wright and T. S. Ricketts.

[continued on page 398

...confirmed by the experts

"The mean for these experiments gives 75.07. We therefore consider 75 as the true number indicated by these experiments for the atomic weight of carbon. It is remarkable that this number was fixed upon theoretically by the English chemists and has now been confirmed by experiments."



DR. MARCHAND OF BERLIN made this statement in a letter recorded in the first volume of the Proceedings of the Chemical Society (1841), challenging the claim of Liebig and Redtenbacher to have established 75.854 as the correct atomic weight for carbon. In those days atomic weights were related to oxygen as 100, and it is notable that the 1951 atomic weight for carbon calculated on this basis is 75.063 compared with Marchand's figure of 75.07 derived from the combustion of diamond and graphite.

Dr. Marchand, whose methods were simple and direct, would have welcomed the convenience and accuracy of 'AnalaR' reagents. It is even possible that they would have assisted the highly elaborate analytical work of Liebig and Redtenbacher to a more successful result.

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Next Week's Events

continued from page 396

Society of Instrument Technology Limited

Glasgow: Natural Philosophy Department, Royal Technical College, 7 p.m. Discussion meeting on 'Maintenance of Temperature Measuring Instruments.'

FRIDAY 11 FEBRUARY

Chemical Society

Newcastle-on-Tyne: Chemistry Building, King's College, 5.30 p.m. Bedson Club Lecture. 'The Place of Theoretical Chemistry in Chemical Education' by R. P. Bell.

St. Andrews: Chemistry Department, The University, 5.15 p.m. 'The Organic Chemistry of Phosphorus' by Professor H. N. Rydon.

Bradford: Technical College, 7 p.m. Opening of Symposium on 'Semi-Micro Analysis' (also on 12 February).

Society for Analytical Chemistry

Cardiff: University College, 7 p.m. 'Some Applications of Modern Techniques in Analytical Chemistry' by Dr. J. R. Nicholls (joint meeting with local sections of RIC, SCI and Chemical Society).

Oil & Colour Chemist's Association

Liverpool: Exchange Hotel, 6.30 p.m. 'The Effect of Temperature on Pigment Colours' by Dr. W. Carr and C. Musgrave.

Society of Cosmetic Chemists of Great Britain

London: Royal Society of Tropical Medicine and Hygiene, Manson House, 26 Portland Place W.1, 7 p.m. Film showing floral cultivation and subsequent treatment and distillation.

British Association of Chemists

London: The Wellcome Institute, 183 Euston Road N.W.1, 7 p.m. 'Work Study as applied to the Chemical Plant Layout' by J. B. Davis.

Institute of Physics

Manchester: Bragg Lecture Theatre, The University, 6.30 p.m. Branch annual general meeting followed by 'Some Physical Aspects of the Soiling of Textile Materials' by W. H. Rees.

Cardiff: University College, 5.15 p.m. 'Rheology as a Branch of Physics' by Dr. G. W. Scott.

London: Institute's House, 47 Belgrave Square S.W.1, 6.30 p.m. Non-Destructive Testing Group, 'Industrial Applications of Radio-Active Isotopes' by S. Jefferson.

Market Reports

LONDON.—Firm conditions have been reported from most sections of the industrial chemicals market and the movement on home account remains fairly substantial. A good export inquiry is in circulation and actual overseas bookings would be greater if the supply position permitted. A certain amount of tightness in supplies is reported for tartaric and citric acids, perborate of soda and hydrosulphite of soda, yellow prussiate of potash and ammonium chloride. There is little change in the coal tar products market with all products finding a steady outlet.

MANCHESTER.—Consumers of heavy chemical products in the Lancashire and West Riding areas are calling for steady contract deliveries of the alkalis, as well as of the potash, magnesium and ammonia compounds, and a fair number of fresh inquiries covering a wide range of products have been dealt with on the Manchester market during the past week. Quotations generally are on a steady to firm basis, without, however, any notable changes on balance. Slightly more buying interest has been in evidence in the fertiliser section. Most of the light and heavy tar products continue to find a ready outlet.

Laboratory Furniture

GRIFFIN & George Ltd. announce that a new company, Grundy Equipment Ltd., has been formed in close association with Grundy (Teddington) Ltd., metal workers and engineers. This step, which has been taken to meet the growing demand for all-metal unit furniture and service pipework for laboratories, will add to the existing Griffin & George facilities, which already include the manufacture of furniture in wood.

The directors of the new company are: Mr. S. W. Grundy, Mr. L. J. West, Mr. A. G. Ramsey, C.B.E., B.Sc.(Eng.), and Mr. D. R. Mauchel, A.A.C.C.A. (secretary), all of Grundy (Teddington) Ltd., and Mr. N. McKinnon Wood, B.A., Mr. N. H. G. Trepte and Mr. A. E. Lambert, from Griffin & George Ltd.

Griffin & George will act as sole selling agents for the new company, which will concentrate on production in the Teddington works until arrangements have been completed for a new factory.

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Further particulars of the post and forms on which to apply may be obtained from the Principal.

BRITISH INDUSTRIAL SOLVENTS, a Division of The Distillers' Company, Limited, manufacturers of bulk organic chemicals, invites applications for the post of General Sales Manager to take over administrative responsibility for Home and Export Sales. It should be emphasised that the post is one for a top ranking executive, and only applicants who have a wide commercial experience in the Chemical Industry in the U.K. will be considered. Preferred age, 37-47. Salary will be the subject of negotiation. Applications will be dealt with in strict confidence by the Division Managing Director, and should be addressed in envelopes marked "Private and Confidential," to:—Division Managing Director, British Industrial Solvents, Devonshire House, Mayfair Place, Piccadilly, London, W.1.

BRITISH INDUSTRIAL SOLVENTS also require senior and junior executives for their Home Sales Department in London. Applicants should be between 25 and 35 years of age, and have commercial experience of the Chemical Industry; technical background would be an advantage. Salary according to age and experience. Pension Scheme. Applications to the Personnel Manager, British Industrial Solvents, Devonshire House, Mayfair Place, Piccadilly, London, W.1.

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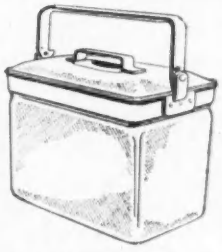

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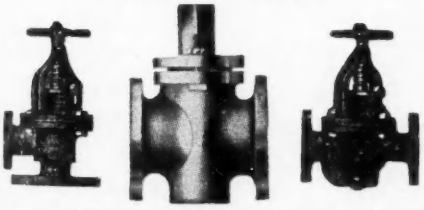

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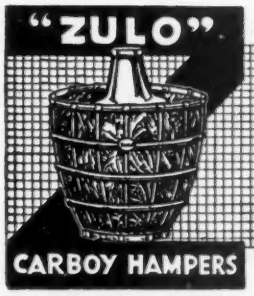

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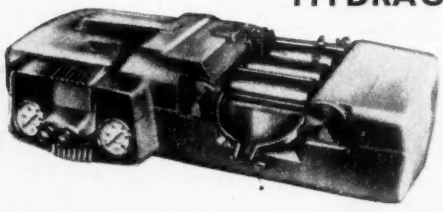

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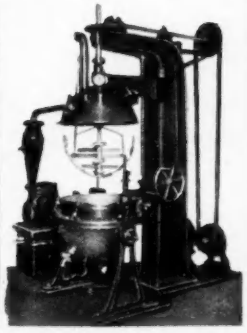

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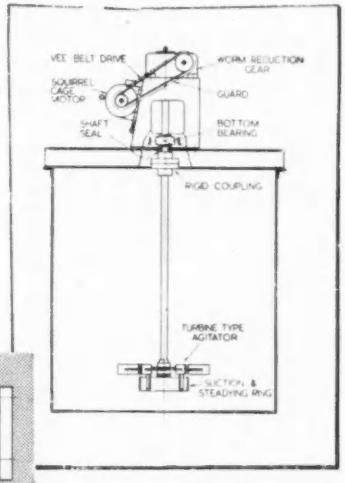

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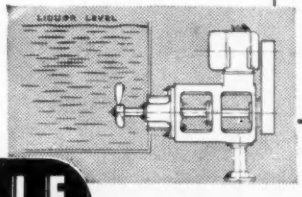

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